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AS  
IN 16  
1903-  
1904

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Indian Museum.

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ANNUAL REPORT,  
1903-1904.

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**WISCONSIN ACADEMY**  
**OF**  
**SCIENCES, ARTS, AND LETTERS**

WISCONSIN ACADEMY  
OF  
SCIENCES, ARTS, AND LETTERS



# Indian Museum.

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## ANNUAL REPORT.

April 1903 to March 1904.



CALCUTTA :  
PRINTED BY ORDER OF THE TRUSTEES,  
1905.



AS  
IN 16  
1903-04

# REPORT OF THE TRUSTEES OF THE INDIAN MUSEUM FOR THE YEAR 1903-04.

The Trustees of the Indian Museum have the honour to submit for the information of His Excellency the Right Honourable the Governor-General in Council their Annual Report on the Administration of the Indian Museum Trust for the year 1903-1904, the contents of which include :—

- i.—Abstract Accounts of Receipts and Expenditure in the Natural History and Industrial Sections.
- ii.—Report of the Superintendent of the Natural History Section, with the usual appendices relating to acquisitions, donors and visitors.
- iii.—Report of the Superintendent of the Industrial Section.

2 At the commencement of the year the Board of Trustees consisted of the following members :—

- |   |   |   |
|---|---|---|
| <ol style="list-style-type: none"> <li>1 W. H. MICHAEL, Esq., I.C.S., Accountant General of Bengal, (<i>ex-officio</i>).</li> <li>2 MAHARAJ KUMAR PRODYOT COOMAR TAGORE.</li> <li>3 SIR JOHN ELIOT, K.C.I.E., F.R.S.</li> <li>4 COL. ST. G. C. GORE, C.S.I., R.E.</li> <li>5 A. TOCHER, Esq.</li> <li>6 MAJOR D. PRAIN, I.M.S.</li> </ol> | } | Nominated by the<br>Governor-General<br>in Council. |
|---|---|---|



## REPORT OF THE TRUTSEES

7. THE HON'BLE MR. A. EARLE, I.C.S.	} Nominated by the Lieutenant-Gov- ernor of Bengal.
8. S. L. MADDOX, Esq., I.C.S.	
9. COL. T. H. HENDLEY, C.I.E., I.M.S.	
10. THE HON'BLE SAHIBZADA MUHAMAD BUKHTYAR SHAH, C.I.E.	
11. RAI OMRITO NATH MITTER, BAHADUR.	} Nominated by the Asiatic Society of Bengal.
12. T. H. HOLLAND, Esq., F.R.S.	
13. SIR JAMES BOURDILLON, K.C.I.E.	
14. G. W. KUCHLER, Esq., M.A.	
15. DR. M. L. SIRCAR, C.I.E.	} Elected by the Trustees.
16. A. PEDLER, Esq., C.I.E., F.R.S.	
17. THE HON'BLE MR. JUSTICE HARINGTON.	
18. R. D. OLDHAM, Esq., F.G.S.	
19. W. BANKS GWYTHYR, Esq., F.R.I.B.A.	
20. THE HON'BLE MR. H. H. RISLEY, I.C.S., C.S.I., C.I.E.	
21. A. FORSYTH, Esq.	

3. During the year the following changes in the Board took place in chronological order :—

On the retirement of Col. T. H. Hendley, C.I.E., I.M.S., the Government of Bengal appointed Mr. G. H. Sutherland to take his place. Mr. J. Macfarlane was appointed by the Asiatic Society of Bengal to the seat vacated by the death of Dr. M. L. Sircar, C.I.E. At the close of the year Lt.-Col. F. B. Longe, R.E., and Mr. G. T. Walker, M.A., F.R.S., were appointed Trustees by the Governor-General in Council in place of Col. St. G. C. Gore, C.S.I., R.E., and Sir John Eliot, K.C.I.E., F.R.S., retired.

## OF THE INDIAN MUSEUM

4. The Annual General Meeting was held on the 9th March 1903 when the following Honorary Officers and Committees were appointed for the year :—

The Hon'ble MR. H. H. RISLEY, I.C.S., C.S.I., C.I.E., *Chairman.*

A. PEDLER, Esq., C.I.E., F.R.S., *Vice-Chairman.*

RAI OMRITO NATH MITTER, BAHADUR, *Honorary Treasurer.*

### FINANCE AND VISITING COMMITTEES.

THE HON'BLE MR. H. H. RISLEY, I.C.S., C.S.I., C.I.E.

A. PEDLER, Esq., C.I.E., F.R.S.

RAI O. N. MITTER, BAHADUR.

W. BANKS GWYTHYR, Esq.

THE HON'BLE MR. JUSTICE HARINGTON.

A. TOCHER, Esq.

MAHARAJ KUMAR P. C. TAGORE.

MAJOR D. PRIN, I.M.S.

COL. ST. G. C. GORE, C.S.I., R.E.

R. D. OLDHAM, Esq.

THE HON'BLE MR. A. EARLE, I.C.S.

THE ACCOUNTANT GENERAL OF BENGAL.

### INDUSTRIAL COMMITTEE.

THE HON'BLE MR. H. H. RISLEY, I.C.S., C.S.I., C.I.E.

A. PEDLER, Esq., C.I.E., F.R.S.

RAI O. N. MITTER, BAHADUR.

W. BANKS GWYTHYR, Esq.

THE HON'BLE MR. JUSTICE HARINGTON.

A. TOCHER, Esq.

MAJOR D. PRIN, I.M.S.

COL. ST. G. C. GORE, C.S.I., R.E.

MAHARAJ KUMAR P. C. TAGORE.

A. FORSYTH, Esq.

THE ACCOUNTANT GENERAL OF BENGAL.

## REPORT OF THE TRUSTEES

5. During the year ten Meetings of the Board of Trustees and ten of the Finance Committee were held, and nine Meetings of the Industrial Committee.

6. At the request of His Excellency the Viceroy the Trustees have made room in the Chowringhee Building for the exhibition of the objects of historical interest collected by the Trustees of the Victoria Memorial. It has been arranged that these collections will, if so required, remain in the Museum until the Memorial Hall is ready for their reception.

7. Consequent on the changes necessitated by this act of accommodation, the Trustees have had in consideration schemes for extending and rearranging the Museum, the necessary funds for which have been provided by a grant of Rs5,00,000 from the Government of India. For this munificent assistance the Trustees desire to record their gratitude.

8. The Natural History Section of the Museum was under the superintendence of Mr. E. P. Stebbing, I.F.S., until the 19th November when Major A. W. Alcock, I.M.S., returned from furlough and resumed charge. This Section has suffered from a dearth of Officers, but the collections have been added to and are all in good preservation. For valuable help in classifying these collections the Trustees are indebted to Professor R. Koehler of Lyon, and to Professor Sorensen and Dr. C. With of Copenhagen.

The Deputy Superintendent of the Section, Mr. F. Finn, who had been on furlough on medical certificate

## OF THE INDIAN MUSEUM.

since the end of the previous year resigned his appointment on the 2nd December.

The Archæological Department has been throughout the year in charge of Dr. T. Bloch, Archæological Surveyor for Bengal.

9. The Industrial Section of the Museum was in charge of Mr. I. Henry Burkill, M.A., throughout the year, except during the period from the 12th December to the 16th March when he was absent on a tour of inspection in his official capacity as Reporter on Economic Products to the Government of India. During his absence, Mr. D. Hooper, F.C.S., the Curator, was in charge. Mr. Hooper was on leave from the 26th June to the 25th September. His post was filled by Mr. J. Weinberg from the 15th July to the 14th August, and by Mr. O. Reinherz, B.A., from the 15th August to the 25th September. Mr. Vieux returned from deputation on August 20th when he resumed his duties as Assistant Curator.

The Trustees regret to record that a theft occurred in this Section during the Durga Puja holidays, but they have had some weak points in the Building strengthened in order to prevent any such occurrence in future.

Numerous additions have been made to all three Courts of this Section—Economic, Artware, and Ethnological—and the collections are all believed to be in good preservation. The Trustees are indebted to His Excellency Lord Curzon and to the Government of India for

## REPORT OF THE TRUSTEES OF THE INDIAN MUSEUM.

many valuable specimens of Indian artware, and they also have to acknowledge the readiness with which the various mercantile firms whose products are exhibited in the Economic court have renewed their samples when required.

Mr. Hooper has been most profitably employed in the Laboratory.

H. H. RISLEY,  
*Chairman.*









*Abstract of Receipts and Expenditure of the  
1st April 1903 to*

RECEIPTS.	Amount.	
	R a. p.	R a. p.
India Government grant for pay of non-gazetted establishment	17,355 3 10	...
Amount of charge allowance sanctioned to Mr. H. W. Peal out of savings on the pay of the late Entomologist	7 11 9	...
		17,362 15 7
India Government grant for maintenance for the year 1903-04	15,943 0 0	...
Savings on gazetted establishment, 1902-03	12,079 15 6	...
Savings on non-gazetted establishment, 1902-03	1,054 10 9	...
		29,077 10 3
India Government additional grant for acquisition of specimens for the year 1903-04	...	4,000 0 0
Bengal Government grant for purchase of teaching preparations for the galleries	...	600 0 0
India Government grant for printing and issuing illustrated Circulars on Agricultural Economic Entomology	...	300 0 0
India Government special grant for structural improvement of the Indian Museum and re-arrangement of the exhibits	...	5,00,000 0 0
Sundry petty receipts	...	295 9 0
<b>TOTAL RECEIPTS</b>	...	5,51,636 2 10
Amount of interest on Government Securities for the year 1903-04	...	595 1 0
Opening balance of suspense Accounts, 1st April 1903 :-		
Investment Account	...	17,164 10 2
Petty suspense Account	...	477 14 2
Opening balance in Bank, 1st April 1903	...	24,506 1 0
Opening balance in hand, 1st April 1903	...	220 3 4
	...	5,94,600 0 6

A. ALCOCK, MAJOR, I.M.S.,

*Secretary.*

*Natural History Section of the Indian Museum from  
31st March 1904.*

EXPENDITURE.	Amount.	
	R a. p.	R a. p.
Pay of non-gazetted establishment . . . . .	17,355 3 10	...
Charge allowance to Mr. H. W. Peal met out of savings on Gazetted staff . . . . .	7 11 9	...
		17,362 15 7
Temporary establishment . . . . .	...	311 8 7
Books for Library . . . . .	...	3,559 2 6
Printing . . . . .	...	1,162 13 8
Purchase of specimens (see separate account)	...	228 9 3
Postage . . . . .	...	372 7 0
Unusual charges :—		
(a) Archaeology . . . . .	6 8 0	...
(b) Advertisement regarding a lost note found in the Museum . . . . .	5 8 0	...
(c) Deputation . . . . .	395 6 0	...
(d) Purchase of a manuscript Catalogue of Butterflies by the late Mr. L. de Niceville . . . . .	1,500 0 0	...
(e) Illustrated Circulars on Agricultural Economic Entomology . . . . .	314 5 0	...
		2,221 11 0
Packing and freight . . . . .	...	1,176 4 9
Furniture (cases, jars, etc.) . . . . .	...	5,244 2 9
Drugs (alcohol, naphthaline, etc.) . . . . .	...	501 1 0
Stationery . . . . .	...	832 4 10
Special Museum stores . . . . .	...	283 9 10
General Museum stores . . . . .	...	1,601 14 6
TOTAL EXPENDITURE . . . . .	...	34,858 9 3
Amount invested in Government Securities (nominal value Rs17,500) . . . . .	...	17,164 10 2
Closing balance of suspense Accounts, 31st March 1904 (to be recovered or accounted for in 1904-05) . . . . .	...	1,530 11 7
Closing balance in Bank, 31st March 1904 . . . . .	...	5,40,695 14 5
Closing balance in hand, 31st March 1904 . . . . .	...	350 3 1
	...	5,94,600 0 6

OMRITO NATH MITTER,

*Honorary Treasurer.*

*Abstract account of expenditure against the  
for the acquisition of speci*

**Dr.**

[illegible]

**A. ALCOCK, MAJOR, I.M.S.,**  
*Secretary.*

**Cr.**

**OMRITO NATH MITTER,**  
*Honorary Treasurer.*

*Funds for publication*

Dr.

	Cash.	Government Securities.
	<i>R a. p.</i>	<i>R a. p.</i>
To Balance in Bank of Bengal .	943 11 4	17,500 0 0
„ Interest on Government Securities for Rs17,500 . . . . .	595 1 0	...
	1,538 12 4	17,500 0 0

A. ALCOCK, MAJOR, I.M.S.,  
*Secretary.*





NATURAL HISTORY SECTION.  
REPORT OF THE SUPERINTENDENT  
FOR THE YEAR 1903-1904.

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I have the honour to forward, for the information of the Trustees, the following report on the progress of the Natural History Section of the Indian Museum for the year 1903-1904.

I. GENERAL.

The most momentous event of the past year has been the receipt from the Government of India of a grant of 5 lakhs of rupees for the general improvement of the Museum: among other things the grant provides for the purchase of land for, and the construction of, much needed outhouses and conveniences for Museum servants.

Another important event has been the removal of the Library and reserve and study collections of Vertebrates from the Chowringhee Building to the Eastern annexe, in order to provide temporary room for the public exhibition of the collections administered by the Trustees of the Victoria Memorial Hall.



## REPORT OF THE SUPERINTENDENT.

These two events have completely roused the Zoological Section out of the quiescent state into which it had fallen after the death of Captain McArdle in October 1902.

Among other radical proposals that have disturbed the Zoological Section is that of the Director of the British Museum (Natural History) that all the Indian Museum "types" should be transferred to the great central institution under his charge. It is the opinion of the Authorities of the British Museum—an opinion which in itself is most reasonable—that the climate of Calcutta is inimical to that enduring preservation which "types" demand, that the isolated situation of Calcutta renders our "types" as objects of reference almost useless, and that therefore the interests of Science would, in every way, be advanced by the transfer of the "types" to the chief working centre of the British Empire. The Trustees, however, so far as the types received from the Asiatic Society go, were debarred from agreeing to the proposal, and outside their obligations to the Asiatic Society, were disinclined to consent to it, for fear of handicapping workers in India.

Another matter that requires more than a passing notice is the reduction of the grant for Entomology from ₹5,000 to ₹3,500 per annum. When in 1900 Dr. Bloch was appointed Archæological Surveyor and his salary from the Museum was permanently reduced to ₹150 per mensem, it was agreed that the savings

## INDIAN MUSEUM.

that would annually accrue from his original salary should be credited to the Museum. On the appointment in 1901 of the late Mr. deNiceville to the special post of Entomologist, the Government resumed the savings on Dr. Bloch's salary to meet the new charge, on the understanding that the annual grant (Rs.5,000) to the Museum for Entomology should not be reduced. After Mr. deNiceville's death the post of Entomologist was transferred from the Museum to the Agricultural Department, but the fact that the Entomologist was being partly paid out of Museum savings seems to have been overlooked, and the grant for Entomology was reduced to Rs.3,500. So that as things stand at present, the Trustees are expected to keep up special machinery for Economic Entomology, and are nominally receiving a grant for the purpose, but, owing to the appropriation of the savings on a Museum Officer's salary to contribute to the pay of an Officer of another Department, they are really losing money over Entomology. The matter has been represented to Government.

To come to general matters of less vital importance; a dwarf wall and railing have been put up to separate the grounds of the Trust from those of the School of Art, a carriage opening being left in accord with old established rights of way; electric fans have been installed in all the offices of the Section; an arrangement has been made by the Public Works Department by which all minor sanitary defects are to be referred to

## REPORT OF THE SUPERINTENDENT,

Contractors (Messrs. J. B. Norton & Sons) direct, instead of being reported through circuitous channels as heretofore; and, finally, there has been much correspondence concerning an exchange of servants' godowns with the School of Art—a matter which will shortly settle itself.

It may also be recorded that during the year a personal allowance of ₹100-100-500 was granted to the present Superintendent of the Section, as a concession to, but not an acceptance of, the Trustees' recommendation that the pay of the post should be increased. The Superintendent had applied for an increase of pay on the general grounds that the official responsibilities of the appointment had increased so enormously, since the Museum was first established, as to greatly curtail those opportunities for original research which make the appointment intrinsically attractive to a Zoologist apart from its emoluments.

## II. ESTABLISHMENT.

Mr. E. P. Stebbing of the Indian Forest Service acted as Superintendent of the Section until November 19th, when Major Alcock, I.M.S., returned from 19 months combined privilege leave and furlough and resumed charge of the appointment.

The post of Deputy Superintendent has been vacant throughout the year, Mr. F. Finn, who had been on extended furlough under medical certificate, having re-

## INDIAN MUSEUM.

signed the appointment on the 2nd December 1903. After Mr. Finn's resignation an attempt was made to fill the appointment from the ranks of the Indian Medical Service, but as the initial pay is less than that of any I.M.S. officer in military employ, the attempt was unsuccessful, and Dr. W. T. Blanford, F.R.S., was then asked to select a suitable recruit in England.

Dr. T. Bloch has held the post of Archæological Assistant in conjunction with the outside appointment of Archæological Surveyor for Bengal. He worked in the Museum from the 2nd April to the 16th July, and from the 23rd July to the 19th November, when he went on his tour of Survey.

The Office of Entomological Assistant instituted in January 1901, and become vacant by the death of Mr. deNiceville in December of the same year, was formally removed from the Museum Trust, and attached to the Department in charge of the Inspector-General of Agriculture, by Revenue and Agricultural Department letter No. 64s, dated 28th February 1903. This fact should have been recorded in the last Annual Report.

During the year in report the custody of the Entomological Department was in the hands of Mr. H. W. Peal until the 8th March when it was placed in the hands of Mr. J. B. Richardson.

The Naturalist to the Marine Survey worked in the Museum for several months, as usual, and assisted by registering and naming some of the recent additions to the collections deposited by the "Investigator."

## REPORT OF THE SUPERINTENDENT,

The present state of the staff of the Section is as follows :—

### *Gazetted—*

Superintendent.	Major A. Alcock, I.M.S.
Deputy Superintendent.	Vacant.
First Assistant (Archæology)	Dr. T. Bloch.

### *Non-gazetted—*

Librarian	Mr. C. O. Bateman,
Clerk	„ D. O'Sullivan.
Entomological Assistant	„ J. B. Richardson. (since the 8th March.
Personal Assistant	„ C. A. Paiva. „
Invertebrate Gallery Asst.	„ H. W. Peal. „
Fish & Reptile „	„ A. O. Paiva.
Mammal & Bird „	„ Vacant.
Archæological „	„ Babu B. B. Mookerji.
Artist	„ A. C. Chowdhry.
Modeller	„ P. C. Chatterjee.
Entomological Artist	„ G. C. Chuckerbutty.
Head Taxidermist	„ Mr. A. Martin.
Accountant	„ Babu J. N. Chakraburty.

The taxidermist of the Darjeeling Museum continued to avail himself of the resources of our workshop during the year.

## III. COLLECTIONS AND ACQUISITIONS.

The collections are in good preservation but are not as a whole in good order. During the month of September the spirit collections of Vertebrates in the main

## INDIAN MUSEUM.

Chowringhee building were hurriedly removed to the top storey of the eastern annexe in order to make room for the Victoria Memorial Exhibition. The collections were so disturbed in the process that many months must elapse before they can all be systematically re-arranged and made available for reference.

In December and January the Entomological collections were removed from the inaccessible heights of the north-western tower of the Chowringhee building to the top storey of the eastern annexe, where, with the other Land Arthropods, they have been properly grouped, and are now being carefully re-arranged and re-labelled.

The collection of Mollusca, some of the labels in which had been attacked by cockroaches during my absence, is in course of being overhauled and re-labelled. The whole collection had to be moved and compressed to make place for the Library, which in turn had been displaced by the Victoria Memorial Exhibition.

The requirements of the displaced Library have also necessitated the removal and rigid compression of the collections of Marine Invertebrates.

The following collections or portions of collections are still either in, or on the way to or from, Europe.

1. Deep-Sea *Alcyonaria* with Professor Arthur Thomson of Aberdeen.
2. Some "types" of *Arachnida* with Mr. R.J. Pocock of the British Museum.

## REPORT OF THE SUPERINTENDENT,

3. Deep-Sea *Crinoidea* with Mr. F. A. Bather of the British Museum.
4. Deep-Sea and Littoral *Echinoidea* with Professor R. Koehler of Lyon.
5. Deep-Sea and Littoral *Holothurioides* with Professor R. Koehler of Lyon.
6. *Hemiptera* with Mr. W. L. Distant of the British Museum.
7. Deep-Sea *Isopoda* (Crustacea) with Mr. F. E. Beddard, F.R.S. of the Zoological Society.
8. *Longicorn Beetles* with Mr. C. J. Gahan of the British Museum.
9. Some "Investigator" *Mollusca* with Mr. E. A. Smith, I.S.O. of the British Museum.
10. "Investigator" *Polychaeta* left at the British Museum by Dr. Arthur Willey.
11. Some *Giant Tortoises* with the Hon'ble W. Rothschild of Tring.
12. Some specimens of the Ccleopterous families *Erotylidae*, *Endomychidae* and *Coccinellidae* have been sent to the Rev. H. S. Gorham for identification; and Mr. E. P. Stebbing has taken some *Cerambycidae* to England with him.
13. Some of deNiceville's "types" of Indian butterflies were sent to the British Museum to Colonel C. T. Bingham, who is engaged upon

## INDIAN MUSEUM.

a work on the butterflies of India for the Fauna of British India Series, but unfortunately several of them were irreparably damaged in transit. Colonel Bingham's report on the damage done is appended.

In this place also the fact must be recorded that 429 damaged birdskins of the old A. S. B. collections have been struck off the registers and destroyed. They had been in quarantine for many years and the space that they occupied was required for other purposes.

The *Opilionida* sent to Professor Sorensen of Copenhagen have been returned named.

The total number of acquisitions registered during the year is 6,223, namely 5,841 Zoological and 382 Archæological, but more than half of those registered under zoology are Mollusca acquired many years ago but not registered at the time.

I have not had time to carefully examine the zoological acquisitions, but I have noticed nothing of very peculiar interest.

The largest donor is as usual the Marine Survey Department which for many years has been the mainstay of the Zoological Section. The Zoological Gardens and Mr. W. Rutledge have also kept up their constant contributions. Of other donors the following must be specially mentioned :—

Mr. Möller of Darjeeling, for a large named collection of bees, wasps and butterflies ;



## REPORT OF THE SUPERINTENDENT.

Captain H. Wood, R.E., for a large series of bird skins from the country near the North-East Frontiers ;

Mr. H. W. Biggie for miscellanea from North Siam ;

Mr. G. Rogers for miscellanea from the Andamans ;

Major C. G. Nurse for Reptiles, Amphibia and fresh-water crabs from Baluchistan ;

Messrs E. P. Stebbing and Fischer for a collection of insects from Ganjam ;

Mr. H. W. Seton-Karr for prehistoric stone-implements from the Fayum (Egypt).

## • IV. PUBLICATIONS.

### (a) *Official.*

Indian Museum Notes, Vol. V, No. 5 (Index), and Vol. VI, No. 1, edited by Mr. E. P. Stebbing, were published and issued.

Mr. E. P. Stebbing also compiled and distributed a Series of 12 leaflets on Economic Entomology.

The manuscript of Professor Koehler's Monograph of the Indian Deep-Sea Holothurioidea has been received and sent to press, the plates are being prepared in Europe under Prof. Koehler's supervision.

The manuscript of my Descriptive Catalogue of Indian Paguridæ is far advanced.

## INDIAN MUSEUM.

The second fascicule of the Hand List of Birds in the Indian Museum, which was left in the press by Mr. Finn, is still in the press unfinished.

It may here be mentioned that the manuscript of the final volume of the late Mr. deNiceville's Butterflies of India was purchased by the Trustees and placed at the disposal of Colonel Bingham for use in his work, already mentioned, upon the Indian Lepidoptera.

A proposal to make a joint Catalogue of the Coins in the Indian Museum and the Asiatic Society's collections, under the authorship or editorship of Mr. Vincent Smith, I.C.S. (retired), has been formulated and is now under consideration. If the proposal bears fruit the coins will have to be sent to England, and advantage will be taken of the opportunity thereby afforded of having a set of electrotypes made for exhibition in this Museum.

### (b) *Unofficial.*

The only unofficial publications connected with Museum material are the following:—

With, C.—New and Old Phalangiidæ from the Indian Region. *Journal of the Linnean Society*, Vol. 28, 1903.

Pace, S.—On the Anatomy of the Prosobranch Genus *Pontiothauma*, E. A. Smith. *Journal of the Linnean Society*, Vol. 28, 1903.

Koehler, R. and Vaney, C.—*Entosiphon deimatis*. Nouveau mollusque parasite d'une Holothurie abyssale draguée par l'Investigator. *Revue Suisse de Zoologie*, Vol. II, 1903.

## REPORT OF THE SUPERINTENDENT,

### V. EXCHANGES AND DONATIONS.

There have been sent out :—

- (1) To the British Museum some specimens of Paguridæ.
- (2) To the Copenhagen Museum, some specimens of Opilionida, and of two species of Echinoids.
- (3) To Dr. F. Werner, a specimen of a lizard.

There have been received :—

- (1) From the British Museum, a specimen of Paguridæ.
- (2) From the Royal College of Science, some specimens of a freshwater crab from Lake Tanganyika.
- (3) From the Copenhagen Museum, some specimens of Oriental Opilionida.

The Seals of the Governors General, received from the Mint in 1885 have been transferred to the Trustees of the Victoria Memorial.

### VI. THE GALLERIES.

All the Galleries have been examined and put in order since my return from furlough.

A set of wall-cases have been erected in the balcony of the Fish Gallery.

Mr. H.W. Seton-Karr went over the court containing prehistoric stone-implements and arranged his own donations there.

Mr. E. P. Stebbing set up, in the court adjoining the first floor of the Industrial Section, some exhibits illustrating certain forest-pests and the results of their ravages.

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### VII. THE LIBRARY.

The whole of the library has been removed from the Chowringhee building to the first floor of the Eastern annexe, and the old library room has been made over to the Victoria Memorial Trustees for their temporary use. Mr. C. O. Bateman has been in charge of the library throughout the year, except from the 15th June to the 15th July when he was on privilege leave, and has kept it, and the records pertaining to it, in excellent order. The additions are specified in Appendix E.

### VIII. THE PUBLIC.

The total number of visitors who entered through the Chowringhee gate during the year is 497,229 as shown, month by month, in Appendix F, a daily average of 2,063. The Museum was well frequented by women and children on Thursday afternoons and by students on other non-public days.

### IX. CONCLUSION.

The usual appendices, in addition to those already specified, are annexed.

In conclusion, the Zoological Section, though understaffed, and to a certain extent cramped by recent changes already specified, has about kept its level ; but the want of officers is a defect that must soon prove fatal. The number of Zoological officers sanctioned is two, and for the past sixteen months only one has been present. One

## REPORT OF THE SUPERINTENDENT.

officer is not sufficient to attend to the mere routine duties of curation and discipline, and he must either neglect these or must neglect collecting, study and research, and everything else that adds strength to the Museum and makes it a vital part of the education of the country.

An Imperial Museum of Natural History, such as the Zoological Section of the Indian Museum was designed to be, should be at once a complete and modern index of the fauna of the country, an object-lesson in the more important general principles of Zoology, an unfailing magazine of well-preserved material for research and distribution, and a centre where natural science in general is advanced by the discovery and publication of new facts. The facts that the Museum receives a grant for teaching-preparations from the local Government, and has decided that its "types" must be kept on the spot for reference, indicate that this is the standard that the Trustees wish to be realized. But grants of money and the possession of historic "types" are not enough, equally essential are well-qualified paid assistants and reliable machinery for collecting new material and replenishing old. So far as the last named requirement goes, the Marine Survey does all that is wanted for marine material, but an agency of a similar sort is necessary for collecting material from all parts of the land.

A. ALCOCK, *MAYOR, I.M.S.,*  
*Superintendent, Indian Museum.*

## INDIAN MUSEUM.

### APPENDIX A.

#### *Report of the First Assistant (Archæology).*

I have the honour to submit the following notes on the work done in the Archæological Department of the Museum during the year 1903-1904.

#### **New Acquisitions.**

##### *Archæological objects.*

The number of additions to the Archæological collection is 216. Most of these are ancient stone-implements from Egypt. There are also some specimens of ancient pottery from Baluchistan, and some brass seals from the Takla Makan desert. Two of these evidently bear inscriptions in ancient Chinese and Mongolian characters. As no expert in these matters is known to me in India, I have recently sent impressions to Professor W. Grube of Berlin, a well-known Chinese and Mongolian scholar, and I hope that I may soon hear from him about those curious inscriptions.

In my capacity as Archæological Surveyor of Bengal, I have been able to add some interesting new specimens to our collection. Seven Buddhist statues from Kurkihar in Gaya District have been presented by the Bengal Government at my recommendation. They are very fine statues and almost perfect as regards preservation, and they represent types new to our collection: Three still finer images are now at village Bishenpur, close to Kurkihar. As the local people were not willing to part with them, I thought that a money offer might move them, and as Rs 400 were placed at my disposal by the Director General of Archæology out of the Imperial grant for Archæological purposes, I asked the Collector of Gaya to see if the villagers of Bishenpur would agree to part with their statues on payment of this sum. They were quite

## REPORT OF THE SUPERINTENDENT,

willing to do so, as they merely wanted a new Thakurhari instead of these old images, for which they did not seem to care much. I regret, however, that owing to the delay of these transactions it has been impossible to draw the money during the last financial year, but I am assured by Mr. Marshall, that the sum will be placed at my disposal during the current year.

The second half of an ancient Sanskrit inscription was found during the clearance of the debris around the Mundeswari temple in District Shahabad. When I saw it, I found at once that the first half of it already was in the Museum, and I accordingly moved Government to have it sent to the Museum, together with some other inscribed slabs of less importance. Its date corresponds to 635 A. D. It mentions a hitherto unknown chief Udayasena, who granted some villages to the temple. I have also secured through Government for the Museum three Muhammedan inscriptions which I have found lying in the Munsif's Court at Kulna, in Burdwan District. They come from the old mosque and tombs at that place, and are of historical interest.

My excavations at the old fort of Basar, the site of ancient Vaisali, in the Muzaffarpur District yielded a number of interesting objects, which in due time will be handed over to the Museum. Chief among them are seven hundred and odd clay seals with inscriptions of the 4th and 5th century A. D. One belongs to the Queen of Chandra Gupta 2, and another one to Ghatolkacha, the father of Chandra Gupta 1. The symbols represented on them also are of interest. On one seal is perhaps the oldest existing representation of a linga, which hardly differs much from later forms.

### *Coins.*

The new additions number 166. The most interesting among them are Indo-Chinese and Ancient and Mediæval Chinese coins from Chinese Turkestan. They have been described by Dr.

## INDIAN MUSEUM.

Hoernle in his Report on Central Asian Antiquities and appear to be found in great number in the Central Asian sand desert. But the Museum had not any specimens of them.

The following show the number, metal and class of the new coins:—

	AV	AR	Æ
South Indian, Kadamba Kings . . . . .	1	...	...
Sultans of Delhi . . . . .	1	...	...
Sultans of Guzarat . . . . .	...	...	2
Suri Sultans . . . . .	...	...	1
Moghul Emperors including East India Company . . . . .	...	75	...
Kings of Oudh . . . . .	...	23	...
Non-Indian Muhammedan . . . . .	1	...	3
Ancient and Mediæval Chinese, including Indo-Chinese . . . . .	...	...	59
<b>TOTAL</b>	<b>3</b>	<b>98</b>	<b>65</b>

### *Improvements in Gallery.*

The labels in the gallery have been renewed, and in some cases more suitable ones on black wooden boards have been placed instead of the old ones.

As the photographs now hung up on the walls of the Gallery had become faded, I made a selection of new ones from the negatives in the Museum, which have been printed by Messrs. Bourne and Shepherd. The selection has been made so as to exhibit representative types of all the different styles employed in Hindu and Buddhist architecture, from the earliest times down to the beginning of Muhammedan rule.

### *Tours.*

I was away on tour in my capacity as Archæological Surveyor of Bengal for 155 days. Out of these 42 days were Sundays and gazetted holidays.

T. BLOCH,  
First Assistant.



# REPORT OF THE SUPERINTENDENT,

## APPENDIX B.

*List of "types" of butterflies sent to Colonel C. T. Bingham, with Colonel Bingham's remarks on the damage done in transit.*

No.	Name.	Damage done in transit.	REMARKS.
1	<i>Mycalesis misenus</i> ♀ type	Left fore and hind wing, head and abdomen knocked to pieces.	Repaired wings so far as possible. Head and abdomen beyond repair.
2	Do. Do. ♂ type	Abdomen broken to pieces.	Irreparable.
3	Do. <i>mystes</i> ♂ type	Nothing of the body left. Wings broken.	Repaired wings so far as possible.
4	Wet-Season form. Do. Do. ♂ type	Antennæ and abdomen in fragments.	Irreparable.
5	Dry-Season form. Do. <i>adamsoni</i> ♂ type	Antennæ in pieces.	Do.
6	<i>Ypthima lycus</i> ♂ type	Abdomen and antennæ knocked to pieces.	Do.
7	Do. Do. ♀ type	Only left fore wing, antennæ, head and thorax left.	Do.
8	<i>Lethe gulnikul</i> ♀ type	Antennæ gone, wings badly broken.	Latter repaired so far as possible.
9	Do. Do. ♂ type	Do.	Do.
10	<i>Ragadia cristolans</i> ♂ type	Antennæ gone.	} Irreparable.
11	Do. Do. ♀ type	One antenna and abdomen gone.	

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No.	Name.	Damage done in transit.	REMARKS.
12	<i>Ragadia crito</i> ♂ type	Antennæ and abdomen gone. Right fore wing broken.	Mended last.
13	Do. Do. ♀ type	One antenna and abdomen gone.	Irreparable.
14	<i>Symbrenthia sinis</i> ♀ type	Antennæ gone. Wings in rags.	Do.
15	Do. <i>silana</i> ♀ Not marked type.	Right fore and hind wing badly shattered.	Mended so far as possible.
16	<i>Elymnias minus</i> ♂ type	Wings badly shattered.	Mended.
17	<i>Dyctis dædalion</i> ♂ type	Do.	Do.
18	<i>Neptis nycteus</i> ♀ type	Antennæ gone.	Irreparable.
19	Do. Do. ♂ type	Antennæ and abdomen gone.	Do.
20	Do. <i>nar</i> ♀ type	} Antennæ gone.	Do.
21	Do. <i>nana</i> ♀ type		Do.
22	<i>Clerome kerata</i> ♀ type	Do.	Do.
23	<i>Ypthima cerealis</i> ♂ type		Undamaged.
24	Do. Do. ♀ type		Do.
25	Do. Do. ♂ type dry-season.		Do.

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No.	Name.	Damage done in transit.	REMARKS.
26	<i>Ypthima lycoides</i> ♂ type		Undamaged.
27	Do. Do. ♀ type		Do.
28	Do. <i>iarba</i> ♂ type		Do.
29	Do. Do. ♀ type		Do.
30	<i>Symbrenthia silana</i> ♂ not type		Do.
31	<i>Elymnias chelensis</i> ♂		Do.
32	<i>Argynnis mackinnoni</i> ♂ type		Do.
33	Do. Do. ♀ type		Do.
34	<i>Euthalia elicius</i> ♂		Do.
35	Do. Do. ♀		Do.
36	<i>Cirrochroa nicobarica</i> ♀		Do.
37	Do. Do. ♂		Do.
38	Do. Do. ♂		Do.
39	<i>Melanocyma fau-</i> <i>nuloides</i> type		Do.
40	<i>Discophora deo</i> type		Do.
41	<i>Cyrestis tabula</i> type		Do.
42	<i>Apatura artaxes</i> ♂ type		Do.
43	Do. Do. ♀ type		Do.
44	<i>Euthalia binghami</i> type		Do.
45	Do. <i>eriphyle</i> type		Do.

## APPENDIX C

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INDIAN MUSEUM.

APPENDIX D.

*List of Donors to the Indian Museum during the  
year 1903-04.*

Alcock, Major A., I.M.S., F.R.S. Archæological Survey of Bengal.	Jackson, Mr. W.
Barber, Mr. C. A.	Karr, Mr. H. Seton.
Biggie, Mr. H. W.	Leake, Mr. H. M.
Birch, Major L., R.A.	Lefroy, Mr. H. Maxwell.
Bombay Royal Asiatic Society.	Logan, Mr. M. H.
British Museum (by exchange).	Maclachlan, Capt. S., R.N.R.
Brown, Mr. C. M.	Manager, Baraora Tea Estate.
Buller, Mr. Hughes, I.C.S.	Mann, Dr. H.
Burkill, Mr. I. H.	Marine Survey of India.
Campbell, Mr. A.	Nurse, Major C. G.
Copenhagen Museum (by ex- change).	Pargiter, Mr. F., I.C.S.
Director, Forest School, Dehra Dun.	Prain, Major D., I.M.S.
Ezra, Mr. D.	Rogers, Mr. C. G., I.F.S.
Finn, Mr. F.	Rogers, Capt. L., I.M.S.
Fischer, Mr. C., I.F.S.	Royal College of Science, London.
Gardiner, Mr. J. Stanley.	Rutledge, Mr. W.
Gerard, Mr. E.	Smith, Capt. Dorien.
Government of Bengal.	Stebbing, Mr. E. P., I.F.S.
"    "    India, Revenue	Stevens, Mr. H. W.
and Agricultural	Stracey, Mr. D.
Department.	Superintendent, Victoria Gardens,
"    "    the United Prov-	Bombay.
inces.	Thomas, Mr. O.
Green, Mr. E. E.	Trevandrum Museum.
	Wood, Capt. H., R.E.
	Zoological Gardens, Alipore.

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### APPENDIX E.

#### *Additions to the Library.*

##### BOOKS AND SERIALS PRESENTED.

- Adelaide, Public Library, Museum and Art Gallery of South Australia. (Annual Reports for 1901-02 and 1902-03.)
- Adelaide, Royal Society of South Australia. (Transactions, vols. xxvi and xxvii, and Memoirs, vol. ii, No. 1.)
- Agassiz, A. (Expedition to the Maldives by — .)
- Albany Museum. (Records, vol. i, No. 1, and Report for 1902.)
- Alcock, A. (9 miscellaneous scientific papers.)
- Amherst, (Mass.) Agricultural College. (Bulletin of the Hatch Experiment Station, Nos. 58, 67, 86 and 88.)
- Amsterdam, Phytopathologisch Laboratory. (Tijds. over Plantenziekten, No. viii.)
- Asiatic Society of Bengal. (Proceedings, January to August 1903, and Journal, Part I, vol. lxxi, No. 2, and vol. lxxii, No. 1; Part II, vol. lxxii; Part III, vol. lxxii, No. 2, and vol. lxxiii, No. 1.)
- Aurivillius, C. (4 papers on Insects.)
- Bangalore, Mysore Government Museum. (Annual Report for 1902-03.)
- Barbadoes Imperial Agricultural Department. (Journal, vol. ii, No. 3, vol. iii, No. 4, and vol. iv, Nos. 2-3. Agricultural News, vol. i, Nos. 9-11 and 13 and vol. ii, Nos. 21-26, 28, and 31-48. West Indian Bulletin, vol. iv, No. 1.)
- Basel Naturhist. Gesellschaft. (Verhandlungen, vol. xv, No. 1, and vol. xvi.)

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- Bather, F. A. (Names on the Labels in Public Galleries.)
- Bellotti, C. (Diun Nuovo Pteraclide Giapponese.)
- Berlin Zoologische Museum fur Naturkunde. (Bericht for 1900.)
- Berne Swiss. Entomological Society. (Bulletin, vol. x, No. 10 and vol. xi, No. 1.)
- Bombay Natural History Society. (Journal, vol. xiv, No. 5, and Vol. xv, Nos. 1-2.)
- Boston Natural History Society. (Proceedings vol. xxxi, Nos. 1, and 3-7.)
- „ State Board of Agriculture. (Crop Report for August 1895.)
- Boucard, A. (Les Oiseaux utiles et nuisibles.)
- Bristol Museum. (Report for 1896-98.)
- British Museum, Bloomsbury. (Catalogue of additions to MSS. in the years 1894-99. Catalogue of Sanskrit MS. Supplementary Catalogue of Chinese Books and MS.)
- British Museum of Natural History. (Returns for 1903. Library Catalogue, vol. i. Monograph of Culicidæ, vol. iii. Report on Economic Zoology, vol. i. Hand List of Birds, vol. iv. Catalogue of Birds' eggs, vol. iii. Catalogue of Lepidoptera Phalænæ, vol. iv. Catalogue of Madreporaria, vol. iv. Catalogue of the Leach Collection of Palæartic Butterflies. Monograph of the Tsetse Flies.)
- Brooklyn Institute of Arts and Sciences. (Bulletin, vol. i, Nos. 2-3, and two pamphlets.)
- Brussels Musee d'Histoire Naturelle. (Memoirs, vol. i, No. 3, and vol. ii.)
- „ Societe Royale Malacologique. (Annales, vol. xxxvii.)
- Budapest Museo Nacional Hongrois. (Annales, vol. i, Nos. 1-2. Termezetráji Füzetek, vol. xxv, Nos. 3-4.)
- Buenos Aires Musee Nacional. (Comunicaciones, vol. i, No. 1.)
- Cagliari, Université de—. (Les Problèmes de la Vie, vols. i and ii, by E. Giglio-Tos.)



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- Cairo Khedivial Agricultural Society. (Journal, vol. iv, No. 2, and vol. v No. 6.)
- Calcutta Sanskrit College. (Catalogue of Sanskrit MSS., Nos. 17 and 18.)
- California University. (Zoology, vol. i, No. 2.)
- Cambridge University Museum. (37th Annual Report for 1902. Report of the Library Syndicate for 1902.)
- Cambridge, Mass., U. S. A. Museum of Comparative Zoology at Harvard College. (Bulletin, vol. xxxviii, xxxix, Nos. 5-8, xl, Nos. 6-7, xlii, Nos. 1-5, and xlv, No. 1. Memoirs, vol. xxvi, No. 4, and vol. xxviii. Annual Report for 1902-03.)
- Cameron, P. (On some new Genera and Species of Hymenoptera.)
- Cape Town, South African Museum. (Annals vol. ii, No. 11, vol. ii and vol iv, Nos. 1-2. Annual Reports for the years 1901 and 1902.)
- Chewyreu, I. (La Nutrition Extraracinaire des Arbres Malades.)
- Chicago Field Columbian Museum. (Anthropol. series, vol. iii, No. 3. Botanical series vol. i, No. 7. Geological series, vol. ii, No. 1. Zoological series, vol. iii, Nos. 7-11. Annual Report for 1901-02.)
- Cincinnati Museum Association. (22nd Annual Report for 1902.)
- „ Natural History Society. (Journal, vol. xx, No. 3.)
- Cockerell, T. D. A. (2 papers on Insect pests.)
- Colombo Colonial Govt. (Pearl Oyster Fisheries of the Gulf of Manaar, vol. i, by W. A. Herdman.)
- „ Museum. (Catalogue of the Library. Spolia Zeylanica, vol. i, Nos. 1-4. Report for 1902.)
- Copenhagen Naturhist. Forening. (Videnskab Meddelelser for 1903.)
- Costa Rica Museo Nacional. (Informe for 1898-99.)
- Dar-es Salaam, Kaiserlichen Government. (Berichte uber Land und Forstwirtschaft in Deutsch-Ostafrika, vol. i, Nos. 6-7.)
- de Coubertin, P. (La Chronique de France.)

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- Dehra Dun Imperial Forest School. (*Indian Forester*, vol. xxix, Nos. 5-11.)
- de Saussure, H. (*Analecta Entomologica*, Pt. ii.)
- Dresden Kongl. Sammlungen für Wissenschaften. (Bericht for 1900-01.)
- Dublin Institute of Science and Art. (Ann. Reports for 1900-01 to 1902-03.)
- Dublin Royal Irish Academy. (Transactions, vol. xxxii. Ser. B. Nos. 2-4, and C., Nos. 1-3. Proceedings, vol. xxiv, Nos. 3-4, B. and C.)
- Dundee Free Library. (Report for 1902.)
- Edinburgh Museum of Science and Art. (Guide to the Collection of Egyptian Antiquities. Report for 1902.)
- Fletcher, J. (*The Value of Nature Study in Education*.)
- Fleutiaux, E. (*Les Insectes a Madagascar*.)
- Friedlander and Sohn, Messrs R. (*Naturæ Novitates*, 1902, Nos. 21-24, and 1903, Nos. 1-24.)
- Froggatt, W. W. (6 Entomological papers.)
- Geelong Field Naturalist's Club. (*The Wombat*, vol. v, No. 4.)
- „ Gordon Technical College. (Report for 1900.)
- Genoa, Musei di Zoologia Anatomia Comparata della R. Università. (*Bollettino*, Nos. 117-125.)
- Geological Survey of India. (Memoirs, vol. xxxiv, No. 3. vol. xxxv, No. 2, and Ser. 15, vol. i, No. 5. Records, vols. xxxi, No. 1, and Index to vols. xxi-xxx. *Palæontologia Indica*, Ser. 15, vol. iv. Ann. Report for 1902-03.)
- Ghizeh Zoological Gardens. (Report for 1901.)
- Glasgow, Fishery Board for Scotland. (21st Ann. Report for 1902, Pt. iii.)
- Godwin Austen, H. H. (2 papers on Mollusca.)
- Goeldi, E. A. (*Destruction of Herons and Ibises. Album de Aves Amazonicas*, Pt. ii.)

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Green, E. E. (Annual Report of the Royal Botanic Garden, Ceylon for 1902.)

Grouvelle, A. (2 Entomological papers.)

Government of Bengal. (Tibetan-English Dictionary by S. C. Das. Revised and Edited by G. Sandberg and A. W. Heyde. Flora of the Bombay Presidency, Pt. iii, by T. Cooke. Annual Report of the Archæological Surveyor for Bengal for 1902-03. Notes on the Caves of Udayagiri and Kandagiri by A. Garrett. Notes on the remains in Dhauli and in the Caves of Udayagiri and Khandagiri by M. M. Chakravarti. Annual Report on Public Instruction in Bengal for 1902-03. Annual Report of the Zoological Garden for 1902-03.)

" " Bombay. (Report of the Archæological Survey of W. India for the year ending June 1903.)

" " Burma. (Report on Archæological Work in Burma for 1902-03.)

" " India. (Fauna of British India Hymenoptera, vol. ii. Departmental Notes on Insects that affect Forestry, No. 2, by E. P. Stebbing. Monograph of the Silk Fabrics of Bengal by N. G. Mukerji. Annual Report of the Board of Scientific Advice for 1902-03. Monograph on Tanning and Working in Leather by H. G. Walton. Administration Report of the Andaman and Nicobar Islands for 1902-03. Pests and Blights of the Tea Plant, 2nd edition, by G. Watt and H. Mann. Journal of Indian Art and Industry, vol. x, Nos. 81 and 84. Indian Antiquary, December 1902 to January 1904. Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India, New Series, Nos. 3-7. Epigraphia Indica, Ser. 6, vols. vii and viii. Records of the Botanical Survey of India, vol. ii, Nos. 4 and 6. Ann. Report of the Botanical Survey of India for

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- 1900-01. Annual Summary, Indian Weather Review for 1901 and 1902. Monthly Weather Review, November 1902 to September 1903. Rainfall data of India for 1902. Indian Meteorological Memoirs, vol. xv, and vol. xvi, No. 1. Ann. Report of the Meteorological Department for 1902-03. Report of Operations of the Survey of India Department for 1900-01 and 1901-02. Reports of the Archæological Survey of India, New Imp. Series, vol. xxxii.)
- Haarlem Koloniaal Museum. (Bulletin, vol. xxv and vols. xxvii-xxviii.)
- „ Nederlands Entomologisch Vereeniging. (Entom. Berichten Nos. 7-12.)
- Hamburgh Naturhistorischen Museum. (Mitteilungen, vols. xix-xx.)
- Herdman, W. A. (17th Ann. Report of the Liverpool Marine Biology Committee.)
- Honolulu Bernice Pauahi Bishop Museum. (Memoirs, vol. i, No. 5. Fauna Hawaiiensis, vol. iii, Nos. 2-3. Occasional Papers, vol. ii, No. 1.)
- „ Board of Commission of Forestry and Agriculture. (Bulletin of the Div. of Entomology, vol. i.)
- Illinois State Laboratory of Natural History. (Bulletin, vol. v, and vol. vi, No. 2. Ann. Report for 1899-1900.)
- Imperial Library. (Catalogue of Books in the Reading Room.)
- Ithaca, Cornell University. (Bulletin of the Agricultural Experiment Station, No. 202.)
- Janet, C. (6 papers on Insects.)
- Java Experiment Station. (Mededeelingen, Ser. 3, Nos. 46-50, and Ser. 4, Nos. 1-6.)
- Judd, A. J. (Rock Carvings of Hawaii.)
- Kirkaldy, G. W. (3 papers on Entomology.)
- Lawrence, Kansas University. (Bulletin, vol. iii, Nos. 6 and 8.)

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- Leipzig, Königlich. Sachs. Gesellschaft Wissenschaften. (Abhandlungen, vol. xxxviii, Nos. 1-5. Berichte über Verhandlungen, 1902 Nos. 6-7, and 1903, Nos. 1-5.)
- Lenz, H. (Die Crustaceen der Sammlung Plate.)
- Lexington, State College of Kentucky. (Bulletin of the Agricultural Experiment Station, Nos. 93-95 and 98-107.)
- Lincoln, University of Nebraska. (Agricultural Experiment Station Bulletin, vol. xi, Nos. 1-5, vol. xii, Nos. 1-5, vol. xiv, Nos. 1-4. 12th and 15th Ann. Reports.)
- London Royal Society. (The Sub-Mechanics of the Universe by O. Reynolds. Reports of the Sleeping Sickness Commission, Parts i-iv. Reports to the Malarial Committee, Ser. 8. Proceedings Nos. 472-490. Philosophical Transactions, Ser. A., vols. 201-203, and Ser. B. vol. 196. International Catalogue of Scientific Literature.)
- London Zoological Society. (Catalogue of the Library. Proceedings, 1903, vol. i, Nos. 1-2. Transactions vol. xvi. No. 5.)
- Lucknow Museum. (Annual Report for 1902-03.)
- Madras Museum. (Annual Report for 1902-03.)
- Maclauchlan, J. (Brief Guide to the old Dundee Historical Collection.)
- Manchester Museum, Owens College. (Annual Report for 1902-03. Notes Pts. xi-xiv and xvi and 14 miscellaneous scientific papers.)
- Manila, Bureau of Government Laboratories. (Publication for 1903, Part v.)
- Marine Survey of India. (Annual Report for 1902-03.)
- Melbourne Department of Agriculture. (Journal, vol. ii, Nos. 1-5.)
- „ Royal Society of Victoria. (Proceedings, vol. xvi, No. 1.)
- Mexico Museo Nacional. (Anales, vol. i, Nos. 1-3. Boletín, vol. i, Nos. 1-5.)
- Mitra, S. C. (Note on the Sword-blade Vow and Bihari Folktales of the "Mann und Fuchs" Type.)

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- Monaco, S. A. S. Prince Albert de. (Resultats Campagnes Scientifiques, Fasc. xxiii-xxiv. Notes de Geographie Biologique Marine. Sur le Museum Oceanographique de Monaco by J. Richard. Campagne Scientifique de la Princesse Alice en 1901 by J. Richard. Sur une nouvelle bouteille destinee a recueillir l'eau de mer a des profondeurs quelconques by J. Richard. Bulletin of the Musee Oceanographique, Parts i and ii.)
- Montana University. (Biological Survey Bulletin, Ser. v. A Biological Reconnaissance in the vicinity of Flathead Lake, M. J. Elrod.)
- Montevideo Museo Nacional. (Annales, vol. iv, No. 2.)
- Mookerjee, K. L. (Hindu Society by—.)
- Naples Museo Zoologico R. Universita. (Annuario, vol. i, Nos. 1-20.)
- Natal, Department of Agriculture. (Bulletin of the Entomological Department, Part iii.)
- Nebraska State Board of Agriculture. (Report of the Entomologist for 1901. The Tiger Beetles of Nebraska by L. Bruner.)
- New York American Museum of Natural History. (Bulletin, vol. xvi. Report for 1902.)
- „ American Numismatic and Archæological Society. (Proceedings for 1903.)
- Nova Scotia Institute of Science. (Proceedings and Transactions Ser 2, vol. iii, Nos. 3-4.)
- Ontario Entomological Society. (Canadian Entomologist, vol. xxxv, Nos. 4-12 and vol. xxxvi, No. 1.)
- Ortmann, A. E. (Illax illecebrosus, the Squid from Onondaga.)
- Osborn, H. (Some Insect problems in Ohio.)
- Padova, R. Stazione Bacologica. (Annuario, vol. xxxi.)
- Para (Brazil) Musee d'Histoire Naturelle. (Memoirs, vol. iii. Bulletin, vol. iii, Nos. 3-4.)
- Paris Museum d' Histoire Naturelle. (Bulletin, Nos. 7-8.)
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# REPORT OF THE SUPERINTENDENT,

## INDIAN MUSEUM.

### APPENDIX F.

#### ANNUAL RETURN OF VISITORS.

*Number of Visitors from 1st April 1903 to 31st March 1904.*

Months.	NATIVES.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April . . .	22,685	6,200	369	90	29,344
May* . . .	13,675	4,403	263	70	18,411
June . . .	34,108	8,058	466	130	42,762
July . . .	36,383	8,416	427	120	45,346
August . . .	36,761	7,874	541	171	45,347
September . . .	38,341	11,469	608	146	50,564
October . . .	42,712	9,753	603	158	53,226
November* . . .	16,865	2,864	346	79	20,154
December . . .	37,875	6,843	991	451	46,160
January . . .	37,023	10,574	966	577	49,140
February . . .	40,429	8,714	763	359	50,265
March . . .	36,570	8,139	1,305	496	46,510
GRAND TOTAL .	393,427	93,307	7,648	2,847	497,229

The number of Visitors to the Museum during the 241 days on which the Institution was open to the general public was 497,229 or a daily average of 2,063 persons.

\* Closed on account of annual repairs from 1st to 15th May and 1st to 15th November.





*Abstract of Receipts and Expenditure of the  
1st April 1903 to*

RECEIPTS.	Amount.	
	R a. p.	R a. p.
India Government, grant for non-gazetted establishment	...	8,137 10 0
Savings on non-gazetted establishment, 1902-1903	...	150 4 0
Savings on gazetted establishment, 1902-1903	...	3,245 2 9
India Government grant for contingencies	2,850 0 0	...
India Government grant for Laboratory contingencies	600 0 0	2,450 0 0
India Government, additional grant for acquisition of art specimens	...	6,000 0 0
Sundry and petty receipts	...	178 4 10
<b>TOTAL RECEIPTS OF MUSEUM ACCOUNT</b>	...	21,161 5 7
Sale of Archæological Drawings (Technical Art Series) on behalf of Government of India	29 2 0	...
Sale of Art Manufactures of India, on behalf of Government of India	21 6 0	50 8 0
<b>TOTAL RECEIPTS ON ALL ACCOUNTS</b>	...	21,211 13 7
Opening balance in Bank on 1st April 1903 :—		
India Government (Sale-proceeds on Archæological Drawings, Technical Art Series)	3 12 0	...
India Government (Sale-proceeds of Art Manufactures of India)	12 7 0	...
Industrial Section, General Funds	2,223 4 10	2,239 7 10
Opening balance in hand, 1st April 1903	...	70 5 0
	...	23,521 10 5

**I. HENRY BURKILL,**  
*Secretary to the Trustees, Indian Museum,  
Industrial Section.*

*Industrial Section of the Indian Museum from  
31st March 1904.*

EXPENDITURE.	Amount.	
	R a. p.	R a. p.
Pay of non-gazetted establishment . . . . .	...	8,134 2 3
Pay of temporary establishment . . . . .	...	1,137 13 3
Purchase of specimens . . . . .	...	5,832 13 4
Furniture, cases, etc. . . . .	...	304 0 0
Stationery . . . . .	...	513 12 9
Laboratory . . . . .	...	334 11 7
General stores and contingencies . . . . .	...	2,208 1 3
Unusual charges (erecting the Hlutdaw throne and travelling allowances) . . . . .	...	1,310 4 3
<b>TOTAL EXPENDITURE ON MUSEUM ACCOUNTS.</b>	...	<b>19,825 10 8</b>
Sale-proceeds of Technical Art Series (remitted to Photo. and Litho. Office) . . . . .	...	6 12 0
Sale-proceeds of Art Manufactures of India (remitted to India Government) . . . . .	...	18 0 0
<b>TOTAL EXPENDITURE ON ALL ACCOUNTS</b>	..	<b>19,850 6 8</b>
Closing balance in Bank on 31st March 1904 :—		
India Government (Sale-proceeds of Archaeological Drawings, Technical Art Series) . . . . .	26 2 0	...
India Government (Sale-proceeds of Art Manufactures of India) . . . . .	15 6 0	...
Industrial Section, General Fund . . . . .	3,451 6 6	3,492 14 6
Closing balance in hand on 31st March 1904 .	...	178 5 3
	...	<b>23,521 10 5</b>

OMRITO NATH MITTER,  
*Honorary Treasurer.*

# 1903-1904.

## *Abstract Account of Expenditure incurred against the Government of India, for acquisition*

Month.	Day.	Particulars of Receipt.	Amount.	
			R a. p.	R a. p.
1903. April	30th	Received from the Government of India, Revenue and Agricultural Department, additional Annual Grant for purchase of art specimens for the year 1903-1904 . . .	...	6,000 0 0
		TOTAL R .	...	6,000 0 0

**I. HENRY BURKILL,**  
*Secretary to the Trustees, Indian Museum,  
Industrial Section.*

# 1903-1904.

*Additional Annual Grant of Rs6,000, sanctioned by the  
of art specimens for the year 1903-1904.*

No. of cheques and con- tingent vou- chers.	Date of pay- ment.	Details of Expenditure.	No. of allot- ment.	Amount.	
				R a. p.	R a. p.
C. No. 14.	24-6-03	Assistant Director, Delhi Art Exhibition— Paid balance due on the Bhavnagar house front .	3	4,890 13 4	...
		Commission at 10 per cent. on Rs8,150, being the price of the Bhavnagar house front . . . .	"	815 0 0	5,705 13 4
C. V. No. 291.	3-7-03.	Choksi Ratanlal Govind- lal, Ahmedabad, carved black wood flower stand purchased . . . .	"	...	25 0 0
C. No. 31.	4-9-03.	M. Mahammed Dir, Home and Foreign Sec- retary to His Highness the Nawab of the Bhawalpur State, Bha- walpur. . . . .	"	...	...
		Ak-Cotton carpet pur- chased . . . . .	"	...	76 0 0
C. V. No. 417.	27-11-03.	Superintendent, Central Jail, Bikanir— Lacquered cabinet pur- chased . . . . .	"	...	31 0 0
...	31-3-04.	Balance . . . . .	"	...	162 2 8
TOTAL R .				...	6,000 0 0

OMRITO NATH MITTER,

*Honorary Treasurer.*



ANNUAL REPORT  
OF THE  
INDIAN MUSEUM.

INDUSTRIAL SECTION.

1903-1904

No.  $\frac{191}{x}$

FROM

I. HENRY BURKILL, ESQ., M.A.,  
*Acting Superintendent, Indian Museum,  
Industrial Section,*

TO

THE TRUSTEES, INDIAN MUSEUM.

*Dated Calcutta, the 28th August 1904.*

SIRS,

I have the honour to submit the Annual Report of the Indian Museum, Industrial Section, for the year ending 31st March 1904.

It is divided into sections as follows :—

- |                            |                             |
|----------------------------|-----------------------------|
| I.—Administration, p. 2.   | IV.—Ethnology Court, p. 21. |
| II.—Economic Court, p. 9.  | V.—Laboratory by            |
| III.—Artware Court, p. 15. | Mr. D. Hooper, p. 24.       |
| VI.—Library, p. 40.        |                             |

## REPORT OF THE ACTING SUPERINTENDENT,

I was absent from Calcutta, on tour, from the 12th December 1903 to the 16th March 1904. During that period, Mr. D. Hooper, the Curator, held charge of the Museum for me.

Mr. Hooper was absent on leave from the 26th June to the 25th September 1903. His post was happily filled first (July 15th to August 14th) by Mr. J. Weinberg of the Rosa Sugar Works, Shahjehanpur, and then (August 15th to September 25th) by Mr. O. Reinherz, B. A., who had just completed a period of service with the Salem Magnesite Company.

Mr. Vieux returned to his duties as Assistant Curator on August 20th, 1903, having served a period of deputation of 15 months in the office of the Director of the Exhibition of Indian Art Manufactures, Delhi. Babu Phani Bhusan Dutt had acted as Assistant Curator from 1st April 1902 to 16th February 1903, and from 17th April 1903 to 19th August 1903. Mr. J. S. Costello acted as Assistant Curator from 17th February 1903 to 16th April 1903.

The Ethnological and Economic Galleries have been open to the public as usual throughout the year. The Artware Court was closed for some time during the rains and in the beginning of the cold weather on account of the work going on in it of arranging the objects obtained from the Delhi Exhibition. As already reported, on a holiday during that period of closure, a thief, with an evident acquaintance of the Museum and its working, found his way into the gallery and stole a quantity of gold jewellery. He escaped undetected.

## INDUSTRIAL SECTION.

Since the theft took place some comparatively weak points in the building have been strengthened to prevent unauthorised entry, and some changes made in the menial staff who do the guarding.

The past year has seen the addition of 1,631 specimens to the Galleries, 1,231 of these were to the Economic Gallery, 343 to the Artware Gallery and 57 to the Ethnological Gallery. During the last ten years the additions have been as follows :—

Year.	Economic Court.	Artware Court.	Ethnological Court.	Total.
1894-95 . .	1,403	242	91	1,736
1895-96 . .	1,075	102	77	1,254
1896-97 . .	2,582	156	43	2,781
1897-98 . .	1,963	63	116	2,142
1898-99 . .	2,102	124	913	3,139
1899-1900 . .	3,707	248	83	4,038
1900-01 . .	1,413	156	85	1,654
1901-02 . .	802	55	1,389	2,246
1902-03 . .	702	230	61	993
1903-04 . .	1,231	343	57	1,631
Total . .	16,980	1,719	2,915	21,614
Annual average .	1,698	172	291	2,161



## REPORT OF THE ACTING SUPERINTENDENT,

The want of space in the Museum, with this rate of growth, is perplexing.

Specimens come quickest to the Economic Gallery. Twelve hundred specimens, or the last year's growth, require about one hundred and fifty square feet of wall space for their exhibition, and there is hardly the half of that left. Yet more on my mind is the expansion of the Artware Collection and of the Ethnological Collection, although their annual growth is very much less.

I mentioned in my last report—page 18—that I had added to the Artware Gallery a small room which adjoined the carpet room. This, the last space available for extension, is now permanently a part of the gallery and has become the new carpet room, while the old carpet room is given up to metal wares, the collection of which had outgrown its bounds. The fittings of these two rooms are not yet completed, though planned out. I have objects to fill all the cases that space admits of. The Ethnology Court is overfull, yet its collections are incomplete. A time has now come when very much attention must be given to that gallery: show cases and specimens alike must be overhauled. I shall shortly recommend that some of the specimens be discarded and that many be replaced.

The Economic Court was thrown open to the public in May 1901. Great and successful efforts had been made during the few previous years to complete the scheme,—witness in the table *ante*, the large additions year by year. The Court, it will be admitted, at the

## INDUSTRIAL SECTION.

opening, looked complete; in other words, it was not far from being full and the objects were in good order. Its fittings had been excellently planned to their purpose. The important objects in it (A products as Sir Edward Buck named them) were seen throughout towards the centre of the gallery where passing visitors must notice them; less important products (B products) were seen behind them. Its unimportant objects (C products) and Specialists' series—specimens which though of A products are only of interest to Specialists,—were seen in the background.

It will still look complete if we slowly displace the Specialists' series by the incoming C products, the displaced exhibits which we cannot discard being kept for consultation behind the scenes. Those who consult them are primarily the Reporter on Economic Products, for whose work they are an absolute necessity, and secondarily merchants and other who not infrequently visit the Museum for information, generally applying in the first place to the Reporter. It is because it is possible to remove from the galleries to a consulting room the series of small samples of A products that I state that the growth of the Economic Collection is less a serious matter for consideration than the growth of the Art and Ethnologic Collections. All Museums have their store of unexhibited objects arranged and labelled and at the service of Specialists, and it is nothing that your Economic Gallery should be like them.

The objects in the Ethnology Gallery in their present state in a very much less degree admit of being sorted out.

## REPORT OF THE ACTING SUPERINTENDENT,

into a consulting collection and a collection for public exhibition, and those in the Art Court practically do not admit of the separation at all.

The curating of the Economic Court is perfectly satisfactory. Its cases and its objects are in excellent condition. Details to be given below will show the renovations which have been done and the kind way in which those who have supplied manufactured objects have replaced any deteriorated exhibits.

The curating of the Artware Court is also satisfactory. Its cases and its objects are in excellent condition. During the past year a great deal of work had been accomplished in it. The purchases made by the Museum from the Delhi Exhibition began to arrive at the very beginning of the financial year and were followed by boxes containing objects presented by the Government of India (see list on p. 15). From the date when the first box came until the end of the year the partial re-arrangement of the Court and the work of getting the objects into their places were pushed forward uninterruptedly.

His Excellency Lord Curzon has continued his donations to the Court.

Visitors to India this year were enabled to buy their specimens of Indian art at the Delhi Exhibition and fewer than usual asked for the addresses of artisans. Next year, doubtless, the Art Gallery will resume in full its functions of helping purchasers to get really characteristic pieces of Indian artware. It is known that since 1901

## INDUSTRIAL SECTION.

about five thousand rupees worth of orders have been placed in different parts of India for copies of exhibits in the Museum.

The labelling of the Court is satisfactory.

The Ethnology Court has old iron cases which it is impossible to make dust-tight. During the past year in some three-quarters of them every gap that could be stopped up has been stopped, and the work will be continued to a completion ; but it is not possible to make the doors satisfactory. The fittings of the cases are also little pleasing, and many of the objects shown need renovation.

It may not have been recently recalled to your notice how important, not only to the Reporter on Economic Products, but to inventors in India, should be the series of models of native Indian machinery which is in the Ethnology Court. As Reporter I need often to consult it in my work of giving information on manufactures, and often also in connection with questions bearing on patent rights. This collection is very far from being complete, and the models are not to any constant scale ; further they cannot be well shown in the space given to them. No part of the Museum do I more desire to improve on account of its very practical bearing ; and for no part do I more desire any help from outside that I can get.

New labels are to be prepared for the Court.

The life size models in the Court are not a complete series, and are not all good. That they are an object of attraction is incontestable, but they now need repainting

## REPORT OF THE ACTING SUPERINTENDENT,

and some need redraping. Museum models, such as they, are of two classes, either they are exact reproductions of actual individuals, in which case the individual chosen must be typical, or they are composite impressions. Our models were of the first class. They were taken from individuals who, however, we cannot now recall in order to match the colour of their skins; therefore, henceforward repairing is bound to be done on the lines of the composite impression, and repainting must be done by determining in a colour scale the correct shade. I want all the criticism of these models that I can get from reliable persons acquainted with the tribes that they represent, and will act on it.

To Mr. Gilbert Rogers, of the Indian Forest Service, I owe gratitude for his kindness in bringing to Calcutta two Andamanese who repaired an Andaman canoe and redraped our Andamanese figures.

The clerical staff has worked satisfactorily throughout the year. Particularly glad am I to have again the vigorous assistance of Mr. Vieux. Babu Phani Bhusan Dutt officiated well as Assistant Curator until Mr. Vieux's return. Babu Khogendra Nath Banerji has made good progress with his task of setting the Library in order. Babu Hemendra Chandra Banerji, in charge of the receiving and despatching department, has registered 3,771 specimens.

The menial staff has given trouble, and there have been more changes during the year than usual among the servants.

## INDUSTRIAL SECTION.

### II.—Economic Court.

During the year under review the collections in this Court, received through the Reporter on Economic Products to the Government of India, amounted to 1,231. These have been arranged in their proper bays, and the following may be mentioned as deserving of special notice:—

<i>Description of Articles.</i>	<i>Whence received.</i>
A large collection of various fishes dried for export.	Mekran Coast, Persian Gulf, Mr. Hughes Buller.
Frogs, eaten in Burma . . . .	Director, L. R. & Agriculture, Burma.
Gelatin and glue . . . . .	Superintendent, Horticultural Garden, Lucknow.
Two samples of honey . . . . .	Mr. Hughes Buller, Baluchistan.
Sample of rubber drawn from <i>Chavannesia esculenta</i> .	Deputy Conservator of Forests, Pegu.
Specimen of Cherry tree gum . . . .	Conservator of Forests, Naini Tal.
A series of different kinds of gums . .	Commissioner of Settlements, Nagpur.
Samples of fat obtained from the Indian Butter tree	Deputy Commissioner, Almora.
Two samples of Rusa oil . . . . .	Conservator of Forests, Hyderabad Assigned Districts.

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<i>Description of Articles.</i>	<i>Whence received.</i>
Specimens of Almond oil . . .	Director, L. R. & Agriculture, Punjab.
Two samples of Til oil perfumed with Jessamine flowers.	Deputy Conservator of Forests, Bushahr.
Sample of oil expressed from the seeds of the Cherry tree.	Conservator of Forests, Naini Tal.
Cloth dyed with chay root . . .	Board of Revenue, Madras.
Sample of trade form of Cutch . .	Deputy Conservator of Forests, Mandalay.
Varieties of jute from the Nepal Terai .	Director General of Statistics.
Samples of paper manufactured from the bark of the paper Mulberry tree.	Deputy Conservator of Forests, Tunggyi, S. Shan States.
Sample of yarn prepared from the floss of Calotropis gigantea and two qualities of rope made similarly.	The Resident, Jaipur.
Various raw fibres and barks . . .	Mr. Gollan, Saharanpur.
Samples of fibre prepared from the bark of the Custard apple tree.	Deputy Conservator of Forests, Angul.
Specimens of Rhea fibres and Rhea fibre manufactures, such as laces, handkerchiefs, shirt, velveteen, etc.	Bengal Rhea Fibre Syndicate, Calcutta.
A variety of material used in mat-making, i.e., munj, hogla, palm, and specimens of mats woven from same.	Superintendent, Botanic Gardens, Saharanpur.
A specimen of cleaned Agave fibre .	Superintendent, Royal Botanic Gardens, Sibpur.
A series of the stems of Cyperus corymbosus (both dyed and plain) illustrating the mode of its preparation for making mats of fine quality.	District Forest Officer, Tinnevely.

## INDUSTRIAL SECTION.

<i>Description of Articles.</i>	<i>Whence received.</i>
Sitalpati mat, fibre and stem . . .	Director, L. R. & Agriculture, Burma.
A specimen of Deccan hemp . . .	Director, L. R. & Agriculture, Berar.
Samples of Agave fibre . . .	Mr. James Peter of Assam; the Bengal Fibre Syndicate; Planters' Stores and Agency Co., Calcutta.
A pillow and coloured mat made of Clino- gyne dichotoma.	Director, L. R. & Agriculture, Burma.
A specimen of mat made from the leaf of the plantain tree.	Assistant, Conservator of Forests, Northern Circle, Bombay.
Specimen of Indian Sarsaparilla . . .	Deputy Conservator of Forests, Sonthal Pergannas.
Samples of various forms of Arsenic from the bazaars.	Director, L. R. & Agriculture, U. P.
Snuff box made from rind of the Bael fruit	Board of Revenue, Madras.
Two samples of medicinal oil obtained from the Sissoo tree.	Forest Officer, Bahraich.
Seeds of <i>Asphodelus tenuifolius</i> . . .	Extra Assistant Conservator of Forests, Jhelum.
Samples of Nilgiri tea . . .	Curator, Botanic Gardens, Ootacamund.
Wheat, hard and soft varieties . . .	Dumraon Experimental Farm.
Specimen of a large lemon . . .	Experimental Farm, Nagpur.



## REPORT OF THE ACTING SUPERINTENDENT,

<i>Description of Articles.</i>	<i>Whence received.</i>
Sample of Jumla rice . . . .	The Resident Nepal.
Sample of Sugarcane . . . .	Director, L. R. & Agriculture, Bengal.
Sample of Coix seeds and flour made from same.	Deputy Conservator of Forests, North Thana, Bombay.
Specimens of different varieties of Capsicum.	Collector of Jessore; Deputy Commissioner, Hissar; Sub-Divisional Officer, Rajshaye, etc.
Fodder grasses . . . . .	Mr. Gollan, Saharanpur.
Bamboo rice . . . . .	Conservator of Forests, Tenasserim Circle, Rangoon.
Specimens of different varieties and forms of the sweet potato.	Collector of Durbhunga, Bengal.
Black salt prepared at Bhiwani . . .	Deputy Commissioner, Hissar, Punjab.
Various forms of Corundum . . . .	Board of Revenue, Madras.
Sample of country iron purified . . .	Deputy Conservator of Forests, Singbhum.
Graphite blocks of different qualities .	Commissioner of Settlements, C. P., Nagpur.
Two clay vases ornamented with coloured lac.	Mr. Hughes Buller, Baluchistan.
Sample of asbestos . . . . .	Political Agent, Zhob.
Two samples of clay used in glazing pottery.	Director, L. R. & Agriculture, Burma.
Four domestic vessels manufactured from Statite.	Resident, Mysore, Bangalore.

## INDUSTRIAL SECTION.

<i>Description of Articles.</i>	<i>Whence received.</i>
A series of the various compounds of calcium carbonate used for building purposes.	Executive Engineer, Lahore.
Green glass . . . . .	Superintendent, Horticultural Garden, Lucknow.
Samples of shoes made of cane . . . . .	Deputy Conservator of Forests, Depôt & Agency Division, Bassein.

At my request the North-West Soap Co., Ltd., very kindly undertook to thoroughly renovate their case and to renew their exhibits of soap and candles with a fresh supply.

Messrs. Shaw, Wallace & Co., Agents of the Holta Tea Co., Kangra Valley, have replaced their old samples of tea. Messrs. Harton & Co., Rope Manufacturers, have made their rope trophy very attractive by not only supplying new specimens of ropes in place of their old ones, but by additional samples of their manufacture. The Cawnpore Woollen Mills have placed two show cards on their case; the Gouripore Oil Co. have put in a fresh supply of linseed oil; Messrs. Balmer, Lawrie & Co., Agents of the Bengal Flour Mills, have sent in a supply of flour; Messrs. Lazarus & Co. of Benares, a fresh stock of their medicinal preparations; the Great Eastern Hotel Co., Ltd., and Messrs. Speed & Co. a fresh stock of their condiments; while Messrs. Monteith & Co. have shown their continued interest for their show case by attending to their display as often as is required.

In my annual report for 1902-1903, I mentioned that Messrs. Burn & Co. had presented this gallery with

## REPORT OF THE ACTING SUPERINTENDENT,

a large ornamental octagonal iron stand. The firm has now taken steps to display on it models of their machinery and a beginning in this direction has been made. The stand will doubtless prove a very considerable attraction.

All the specimens in the cases running along the centre as well as those in the cases in the middle of each bay were cleaned and replaced.

The number of raw products received during the year has been in excess of that received last year. Mr. Gollan of Saharanpur and the Directors of Land Records and Agriculture, Burma and Punjab, have been large contributors.

The Deputy Commissioners of Sylhet, Lakhimpur, Umballa, Montgomery, Muzaffargarh and Jullunder; the Forest Officers of Bombay, Nilgiris, Ganjam, Coimbatore, Pyinmana, Kandesh, Tinnevely, Pegu, Gonda, Khari, and South Malabar have enriched our collection of mats and mat-making materials by their contributions.

Through the kindness of Mr. Hughes Buller of Baluchistan the bay devoted to animal products has received additional specimens, but it still remains to be fully completed.

My series of Indian timbers has also been greatly improved during the year, and I am much indebted to the Forest Department for their contributions.

The work of replacing old and discoloured labels was carried on as usual. An average of 25 labels a day being affixed.

## INDUSTRIAL SECTION.

### III.—Artware Court.

Considerable advances have been made in this Court, and many interesting specimens of art work, were presented to or purchased for it. His Excellency Lord Curzon has continued his support by the gift of the following specimens:—

A model of a boat carved in ivory.

9 Samples of Gaya stone carving.

2 Fans of woven ivory from Bharatpur State.

A coloured print of a North Indian Carpet presented in 1634 to the Worshipful Company of Girdlers by the Master, Mr. Robert Bell, one of the first Directors of the Government and Company of Merchants of London trading into the East Indies.

The Government of India, at the close of the Delhi Art Exhibition, enriched this gallery with 311 specimens of Indian artware. They are enumerated below:—

<i>Names of Articles.</i>	<i>Locality.</i>
2 Marble figures of Budha . . .	Burma.
2 " Koopies " or camel-hide water bottles .	Bikanir.
23 Lacquered boxes and baskets . . .	Pagan, Burma.
16 Lac painted wooden <i>lotas</i> . . .	Bannu.
1 Lacware "surahi" . . .	Dera Ghazi Khan.
1 Do. tobacco jar . . .	Do.
1 Do. vase . . .	Do.
1 Do. tray . . .	Do.
1 Do. plate . . .	Do.

## REPORT OF THE ACTING SUPERINTENDENT,

<i>Names of Articles.</i>	<i>Locality.</i>
1 Lacware wooden chair with cushion .	Rawalpindi.
1 Curved wooden steering chair .	Burma.
3 Carved wooden chairs . . .	Do.
1 Black figured wooden panel . .	Do.
A copy in wood of a stone carving in Hallabid temple.	Bangalore.
1 Set of drawing-room wall panels .	Bombay.
1 Glass mosaic shrine . . .	Burma.
3 Horn trees . . . . .	Ratnagiri.
1 Carved horn candlestick . . .	Do.
1 Ivory and tortoise-shell work and jewel box.	Vizagapatam.
2 Carved ivory figures . . . .	Burma.
1 "Sarwal" or leather horse trapping .	Dera Ghazi Khan.
1 "Faraki" or ornamental leather horse trapping.	Do.
1 "Farain" or embroidered belt . .	Do.
1 "Fang" or girth . . . . .	Do.
1 Cushion for saddle . . . . .	Do.
1 Embroidered padded saddle cover .	Do.
1 Embroidered leather horse trapping .	Do.
1 Pair of reins . . . . .	Do.
1 Pair of brass stirrups . . . . .	Do.
1 Embroidered saddle . . . . .	Do.
1 Embroidered leather band for carrying a sword, with a silver buckle and gold points.	Do.
1 Leather horse trapping . . . .	Do.
1 "Sina band" . . . . .	Do.
1 Embroidered leather "Kotar-dan" .	Quetta.
1 "Kulah" gold and silver embroidered breast piece.	Do.
1 Gold braided waistcoat . . . .	Do.
1 Woman's embroidered silk gown .	Do.

## INDUSTRIAL SECTION.

<i>Names of Articles.</i>	<i>Locality.</i>
1 Gold and silver braided coat . . .	Quetta.
9 Embroidered pieces of a Brahui woman's dress	Do.
1 Embroidered silk Brahui woman's dress.	Do.
2 Camel saddle covers . . . .	Hyderabad, Sind
4 "Tobras" or embroidered cushions .	Quetta.
1 "Kharua" or embroidered saddle bag .	Do.
1 Embroidered silk cloth . . . .	North Arcot.
1 Embroidered Waziri cotton dress . .	Bannu.
56 Pieces of embroidered "Chaklas" . .	Bhavnagar.
28 Pieces of embroidered "torans", . .	Do.
2 Pieces of embroidered cloth . . . .	Do.
2 Work bags . . . . .	Quetta.
1 <i>Than</i> of gold and silver lace-work . .	Benares.
1 Green <i>than</i> embroidered with gold and silver.	Do.
1 Black <i>than</i> embroidered with silver . .	Do.
5 Dyed silk curtains . . . . .	Kathiawar
3 "Patolas" or silk <i>saris</i> . . . . .	Baroda.
1 Silk <i>sari</i> . . . . .	Do.
8 Pieces of <i>kinkhab</i> . . . . .	Benares.
4 <i>Kinkhab rumals</i> . . . . .	Do.
1 <i>Kinkhab</i> . . . . .	Do.
3 Head dresses . . . . .	Sind.
4 <i>Jasims</i> or printed purdah cloth . .	Fattehpur.
37 Specimens of "Chundri" cloths . .	Jaipur.
1 Printed ceiling cloth . . . . .	Godavari.
3 Petticoats made of wax cloth . . .	Baroda.
1 Piece of wax cloth . . . . .	Do.
1 Table cloth . . . . .	North Arcot.
1 Wax cloth dado, . . . . .	Do.
1 Set of plaster casts for an archway .	Lahore.

## REPORT OF THE ACTING SUPERINTENDENT,

<i>Names of Articles.</i>	<i>Locality.</i>
2 "Surahis" (unglazed) . . . . .	North Arcot.
2 Jars with covers (unglazed) . . . . .	Do.
1 "Surahi" (glazed) . . . . .	Do.
1 Plate (glazed) . . . . .	Do.
1 Silver fish . . . . .	Monghyr.
3 Silver "atta-dans" . . . . .	Jhansi.
1 Silver flower basket with handle . . . . .	Cuttack.
1 Anklet (chrysanthemum pattern) . . . . .	Baroda.
1 Gold "nag" or armlet . . . . .	Chanda,
1 Silver mounted dagger handle of Niello work with silver mounted scabbard . . . . .	Toungoo, Burma.
1 Embossed silver bowl . . . . .	Thayetmyo, Burma.
2 Silver candlesticks . . . . .	Madras.
1 Oblong brass tray inlaid with silver . . . . .	Do.
1 Engraved copper tray . . . . .	Kashmir.
1 Copper and brass tea pot . . . . .	Do.
1 Engraved and pierced brass tray . . . . .	Vellore.
1 Carpet . . . . .	Gaya.
4 Carpets . . . . .	Quetta.
1 Carpet . . . . .	Madras.
1 Woollen rug . . . . .	Quetta.
1 Nose bag . . . . .	Do.
10 Woollen rugs . . . . .	Bannu.
1 Carpet . . . . .	Ellora.
5 String bags . . . . .	Bannu.

Through the Reporter on Economic Products, the following specimens were received, *viz.*, two earthenware vases from Gujranwala; 3 small horse-hair rings from Alwar; 3 sets of glazed tiles from Jullunder; glassware from Lahore; mats and matting from Tinnevely; and carpets from Gaya and Bahawalpur. The Director, Land Records and Agriculture, Punjab, sent five parcels

## INDUSTRIAL SECTION.

of rubies weighing th tola, and a carved blackwood flower stand was purchased from Ahmedabad.

It was stated in my last annual report that the **Return of Trustees**, at the request of the Director **Loan Exhibits**, of the Delhi Art Exhibition, sent on loan to the Exhibition, certain specimens of art manufacture. These articles have been received back with the exception of a small brass plate inlaid with silver and copper from Tirupati, which, I regret to say has been lost by the Exhibition authorities. They have, however, replaced the missing article by another of somewhat similar workmanship.

Much attention has been paid during the year under **Re-arrangement** report to the work of re-arranging the gallery. The Bhavnagar house which was purchased at the Delhi Art Exhibition for Rs. 8,965 was erected by a Chinese Contractor in a bay at the left side of the Hludaw throne of ex-King Thebaw.

The space behind this beautiful structure has been assigned to glass, and in the centre of it stands a Burmese glass mosaic shrine—a gift of the Government of India.

The wood-work section having need of more space and also the metal section, some change was necessary in the gallery, and after considering all alternatives it was decided to take the metals to the west end and bring the stone-work section to the east end, the overflow of the metal section being accommodated in the old carpet room and the overflow of the wood section in that part of



## REPORT OF THE ACTING SUPERINTENDENT,

what had been the metal section which was not needed for stone-work. To my satisfaction by doing this, I was enabled to give a better position to an Agra stone-work screen of great beauty. It stands in face of the visitors entering at the western door.

In the centre of the gallery facing the Bhavnagar house front have been placed two cases which formerly contained gold and silver jewellery. In one is shown the sola pith flowers of Mandalay, and in the other the Mysore sandal wood carvings. On the right and left of the house front, two tall wall cases have been affixed and hats, caps and turbans displayed in them. In the niches on either side of the Hludaw throne, at the back, two long show cases with broad glass doors have been erected and in one of them the ivory model of the Taj is shown together with inlaid wood work from Mysore, Mönghyr, Ahmedabad and Surat; in the other is a carved model of a Burmese shrine. This shrine is to be improved by new corner pieces. Its top was made by a Burmese master carver in 1872 and is characteristic, but his pupils, who made the base, departed from the true lines of their country's art. The light on the side of the Court where it is, is unfortunately bad,

Little I fear can at present be done to improve the light. I have tried several experiments without success and others are to be tried which may improve it locally. The right course, were it only practicable, is to break up the long case holding pottery and embroidery, but want of space forbids.

## INDUSTRIAL SECTION.

The cases containing the following classes of specimens were overhauled, each exhibit being cleaned and replaced in their respective cabinets. Carved ivory, lapidary work, boots and shoes, cotton rugs, durries, checked and striped cottons, muslins, damascened ware, *bidri* ware, silver filigrain work, brass wares of Bombay, Madras, Punjab, Bengal, Assam and Rajputana, the glass exhibits, brocades, silks, mixed fabrics, cotton and woollen fabrics, and horn and horn manufactures.

Napthalin to the extent of 158 lbs. has been distributed through the cases in this gallery.

**Preservation.**

Owing to the re-arrangement of the Court, the painted labels on the glass of certain show cases have, of necessity, been removed and the work of re-labelling them has been started. All the soiled cardboard labels which were attached to the articles that were cleaned or removed have been renewed.

**Labelling.**

## IV.—Ethnology Court.

During the year under review the collections were increased by 57 specimens. Particulars of those are given below :—

**Additions.**

(a) *Presented (unless specially mentioned) through the Reporter on Economic Products.*

<i>Description of articles.</i>	<i>Whence received.</i>
1 Country-made bottle with a basket	. Lahore.
6 Carved Coccoanuts . . . .	. Minikoi, through Board of Revenue, Madras.

## REPORT OF THE ACTING SUPERINTENDENT,

<i>Description of articles.</i>	<i>Whence received.</i>
4 Coloured cotton garlands, worn at the time of prayer.	Patiala, Punjab.
5 Specimens of brass alloy metal ware	Sultanpur; Director, L. R. & A., U. P.
1 Sunshade made of leaves of Bauhinia Vahlia.	Director, L. R. & Agriculture, Bengal.
2 "Terrhu" ornaments made of pith	Dy. Commissioner, Naga Hills.
1 Small earthen "surahi" with cover	Parlakimedi, Madras.
1 Winnow made of Saccharain ciliare	Supdt. Govt. Botanic Gardens, Saharanpur.
1 Floor mat made from the leaves of Phoenix sylvestris.	Do.
1 "Balwa" or iron battle axe used by the Hos.	Asst. Conservator of Forests, Singbhum,
1 "Karahi" or saucepan of iron	Mianwali, Punjab.
1 "Saiposh" or dish with cover of iron	
1 "Karachh" or pan of iron	
1 "Tawa" or pan for making chappatis of iron.	
1 "Degchi" with cover of iron.	
1 "Angithi" or iron stand	
Cast bells made at Myitkaing, Pakokku.	Presented by Mr. B. McDermott Deputy Commr., Pakokku.
An old dagger . . . . .	Deposited by Mr. Tyson.
A bow and arrow from Coconada, and a Nepalese armlet or charm.	Presented by Mr. E. Vieux.
8 pieces of old pottery, 4 specimens of beads, and 12 pieces of stone implements.	Presented by Mr. Hughes Buller.

## INDUSTRIAL SECTION.

<i>Description of articles.</i>	<i>Whence received.</i>
A New Zealand Chief's sword of solid whalebone.	Bequeathed to this Museum by the late Mr. W. B. Colville of Calcutta.

### (b) *Purchased.*

A rosary of nuts of Putrinjiva Roxburghi . Kangra.

Mention was made in my last annual report of a gift of a series of ploughs by Mr. B. Heaton, Officiating Principal of the Civil Engineering College, Sibpur. These ploughs, with the exception of a few which need handles, have now been hung up on the walls of the bays allotted to them.

All the musical instruments, weapons (swords, axes and knives), toys, wearing apparels, agricultural implements, models of wheel carriages for cannons, basket ware, sola pith specimens, hats and caps, models of huts and houses, models of boats and oars, boots and shoes, churns, combs, umbrellas, sticks and clubs, cloths and personal dress ware, *hukkas, hukka pipes, chillums, tobacco pipes, brooms, scales, weights and measures, lamps, mats and matting, sieves and winnows*, were cleaned and re-arranged in their respective cabinets.

The gifts of His Excellency Lord Curzon were also cleaned and replaced, while the guns, swords and kookries presented by the Military Department, Government of India, were cleaned, oiled and re-arranged on the walls.

The work of re-labelling was continued, 117 old and damaged ones being substituted by new ones.

Labelling.

## REPORT OF THE ACTING SUPERINTENDENT,

### V.—Laboratory.

(Report by Mr. D. Hooper, F.C.S.)

The Laboratory was in my charge during the year, except for three months, from the 26th June, when I availed myself of privilege leave. Mr. J. Weinberg, Chemist of the Rosa Sugar Works, Shahjehanpur, officiated from 15th July to 14th August, and Mr. O. Reinherz, formerly Chemist of the Salem Magnesite Works, officiated from the 15th August to the 25th September.

Mr. Weinberg was chiefly engaged in an investigation upon Mahwa flowers and the spirit obtained from them by fermentation. Mr. Reinherz made an examination of certain famine foods, including the seeds of *Shorea robusta* and the fruits of wild figs. He was unable, as was intended, to undertake an examination of pottery clay, owing to the insufficient pressure of the gas in the laboratory and the want of certain requisite chemicals.

The number of analyses conducted by me was 212, which may be conveniently classified in the following manner :—

Gums and resins . . . . .	7
Oils and waxes . . . . .	49
Tans . . . . .	2
Fibres . . . . .	10
Drugs . . . . .	41
Food substances . . . . .	72
Minerals . . . . .	31
	<hr/>
	212
	<hr/>

## INDUSTRIAL SECTION.

*Gums and resins.*—Among the resins was a sample from the tree *Pinus longifolia* prepared at Naini Tal. It differed from ordinary commercial resin in being softer in consistence and having other properties which in the market are considered disadvantageous. It was found to contain essential oil, and it was recommended to heat the resin more completely in the still to free it from the oil and harden it.

During the course of preparing some rosin soap for making an insecticide, the Entomologist to the Government of India found that Sal or Ral resin (*Shorea robusta*) behaved in quite a different manner to ordinary pine resin on treatment with caustic soda. The matter was referred, through the Reporter on Economic Products, to this department and comparative experiments were made with Sal resin from various sources. It was shown that the resin of *Shorea robusta* is not of such an acid nature as that of ordinary resin and therefore is not suitable for making rosin soap. The acid value of samples of Sal resin was found to range from 20 to 22, while that of imported resin was 137 and Indian resin 124. Other determinations were made of the solubility of these resins in different liquids.

*Indian rubber.*—Two samples of Indian rubber were examined, one from Assam and the other from the Andamans. The accompanying analyses will show that they were both of good quality, although the second sample was naturally too moist.

## REPORT OF THE ACTING SUPERINTENDENT,

	Assam.	Andamans.
Water . . . .	1 00	27'57
Resins . . . .	12'65	4'87
Caoutchouc . . . .	85'95	67'06
Mineral matter . . . .	'40	'50
	<hr/> 100'00 <hr/>	<hr/> 100'00 <hr/>

*Oils.*—Two samples of oil and one of the oil-cake of the seeds of the Chinese Tallow tree (*Sapium sebiferum*) from the Kangra Valley were examined. The oil has been enquired after of late, and planters with trees in their estates are anxious to turn the seeds to some commercial advantage. Reports were made on the above products and have been printed by the Reporter on Economic Products.

*Helianthus annuus.*—A sample of Sunflower seed oil from Coimbatore was tested, specially with regard to its acid value, to compare its properties with other edible oils. The results were considered satisfactory.

*Ricinus communis.*—The Superintendent, Botanical Gardens, Saharanpur, forwarded to the Reporter on Economic Products two bags of seeds from Nairobi, British East Africa, to know whether the large or small kind was most suitable for oil pressing. It was considered best to estimate the absolute amount of oil by extracting with a volatile solvent such as ether. A determination of this character showed that the larger

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seeds yielded 47·35 per cent. of fixed oil and the smaller seeds 43·65 per cent. or an increase of 3·7 per cent. in favour of the first kind. Messrs. Dubard and Eberhardt record the average yield of oil in East India castor seed as 46·19 per cent. It is interesting to know that by ordinary crushing and heating with water about 37·40 per cent. of oil is extracted from Indian seeds. Mitchell's process, invented in 1893, removes 41 per cent.

*Sandal wood.*—The District Forest Officer, North Coimbatore, supplied billets of sandal wood taken from trees growing in his district at an elevation of 3,700 feet. Doubting the quality of the wood growing at this height, he requested an estimation to be made of the amount of essential oil it contained. It was found that the root wood yielded 3·17 per cent. and that from an upper branch 2 per cent. of essential oil. This very satisfactory result warranted a considerable area of sandal wood forest being placed under regular working.

*Beeswax.*—The Annual Report for 1901-1902 gives some preliminary results of the analyses of twenty-two specimens of yellow beeswax of Indian origin. These waxes were regarded as remarkably pure in respect of the uniformity of the melting points, and the acid and saponification values. Only one sample was undoubtedly fictitious. During the past year the examination of indigenous beeswax has continued, and over 60 representative samples have been tested as before, and



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from their chemical valuation the following conclusions are drawn :—

1. The wax contained in combs from the three Indian bees, *vis.*, *Apis dorsata*, *A. indica* and *A. florea*, are almost identical physically and chemically.

2. Indian beeswax differs from European wax chiefly in the lower acid value.

3. Out of 64 samples examined only three or lees than 5 per cent. were adulterated.

4. The trade in Indian beeswax is capable of expansion.

Two tanning materials reported upon during the year were the extract of the wood of *Tans.* *Acacia sundra* allied to the Cutch tree (*A. Catechu*), and an extract of the juice of *Carapa moluccensis*, known as *Pin-le-on*, from Tavoy, Burma. These two new materials had the following composition :—

	<i>Acacia sundra.</i>	<i>Carapa.</i>
Water . . . .	13'0	39'75
Tannin . . . .	52'5	35'55
Non-tannin soluble .	27'8	5'70
Insoluble matter .	2'2	13'25
Ash . . . .	4'5	5'75
	<hr/> 100'0 <hr/>	<hr/> 100'00 <hr/>

The first is a good astringent extract, but the second is a badly prepared sample containing some insoluble woody matter.

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**Rhea.**—A description of the Algerian method of degumming rhea or ramie fibre by steeping in sea water was published in the *Textile Manufacturer* and copied in *Capital* of June 11th. The method was examined in the laboratory, employing green stems of the plant supplied by the Superintendent, Botanic Gardens, Sibpur. It is a simple process and the fibre is efficiently cleaned without showing any deterioration in strength or colour. But the length of time required for immersion in the saline bath, lasting for about eight days, is far too long for a practical and economic process. The results of the experiment will be found in a note in *Capital* for June 26th, 1903.

**Piassava substitutes.**—The celebrated *Piassava* fibre of South America has several properties which recommend it in certain industries. One of these is its suitability for making the "Scrubbers" for washing coal gas in gas works. The representative of a coal firm enquired if there were any Indian fibre which would answer the same purpose. On examining the collection of fibres in the Economic Court, it was decided that three kinds offered some resemblance to *Piassava* and might be experimented with. These were *Caryota urens*, *Borassus flabellifer* and *Arenga saccharifera*. The fibres were immersed in water treated with a little alkali and allowed to remain for several days. This treatment appeared not to injure the fibres in any way, and when taken out, they had the same elastic and supple properties as in their natural state.

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**Paper.**—In connection with fibres it may be reported that six samples of paper of different qualities were analysed for the Superintendent of Stamps and Stationery, Calcutta.

**Cassia montana.**—About three years ago interest was manifested at the appearance in the London market of a new kind of senna. It came from Madras but it was quite distinct from Tinnevely senna usually exported from that Presidency. Mr. Holmes of the Pharmaceutical Society indentified it as *Cassia montana*, Heyne, a plant of South India. About the same time Professor Greenish described its histological characters. Mr. Barber, Government Botanist, Madras, forwarded a supply to the Reporter on Economic Products for experiment. The leaves had similar chemical characters to those of *C. angustifolia*, but on testing a sample of syrup made from the drug in the Calcutta hospitals it was considered to have a much less satisfactory therapeutic action.

**Cinchona.**—Twenty-four samples of cinchona bark were estimated for quinine, and six samples of cinchona alkaloids were tested for purity for Government departmental purposes.

**Nim leaves.**—Among the plants said to be useful for keeping away mosquitos a correspondent in the *British Medical Journal* quoted the *Nim* (*Melia Azadirachta*) as being poisonous to these insects. The fresh leaves were tested by distilling them with water when it was

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found that a distinct allyl or onion-smelling compound was present in the distillate. The powdered leaf when burnt also gave off a disagreeable odour and the smoke was fatal to some insects. The extract of the leaves was intensely bitter and contained evidence of an alkaloid.

*Kino*.—Investigations into the constituents and properties of Malabar Kino conducted by Mr. E. White, B.Sc., in London, have shown that the peculiar insolubility of this substance in alcoholic and aqueous solutions is due to the action of an enzyme. The examination of the fresh juice of the *Kino* of the Nutmeg tree of Assam (*Myristica gibbosa*) showed that this ferment is present in other astringent juices. Experimenting with the fresh juice, this substance was separated from its tannin constituents and it was found that its properties were destroyed at the temperature of boiling water. The practical lesson from these experiments is that commercial *Kino* is improved by boiling the juice before it is evaporated to dryness.

*Silajit*.—Further light has been thrown upon the nature of this remarkable product. A specimen of "Khalmoit" or "Mumiai," received from Mr. Hughes Buller of Beluchistan, had all the physical characters of *Silajit* sold in the bazaars as a medicinal substance, but one or more of the organic constituents were crystalline and were evidently definite chemical compounds. When time permits a further examination will be made of these substances and their chemical features studied.

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**Dioscorea (yams).**—As regards the number of samples analysed the first place must be given to the tubers of species of *Dioscorea* which are so largely consumed as food under the name of yam. About forty kinds of these roots have been analysed and the results tabulated. The species of *Dioscorea* examined are enumerated below :—

Food sub-  
stances.

*Dioscorea alata*, several varieties.

- „ *aculeata*.
- „ *belophylla*.
- „ *bulbifera*.
- „ *daemona*.
- „ *fasciculata*.
- „ *oppositifolia*.
- „ *pentaphylla*.

The poisonous substance in these yams is an alkaloïd named *Dioscoreine* which was discovered and described in 1897 by Boorsma. This principle was found to be most abundant in *D. daemona*, it was generally present in *D. bulbifera* and *D. pentaphylla*, and if present at all in *D. alata* and *D. fasciculata*, it occurred in traces.

The average amount of moisture in fresh tubers was 80 per cent. and the average percentage composition of the dried tubers was: Fat 1·02, Albuminoids 10·87, Carbohydrates 77·01, Fibre 5·16, Ash 5·94, Nitrogen 1·73.

The starch of the yams was examined microscopically and certain species were found to have characteristicly shaped granules, which distinguished them from other species.

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*Indian Pot-herbs.*—Various green plants used as substitutes for the true Spinach and called “Sags,” in this country have been investigated. Varieties of *Amarantus* and *Basella* are largely consumed as wholesome pot-herbs, and in times of scarcity the leaves of various other plants are used to sustain life. With a view to ascertain their value in albuminous matter and the nature of the saline constituents, they were submitted to chemical analysis. The enquiry in the first place was restricted to plants belonging to the natural orders *Amarantaceæ*, *Chenopodiaceæ* and *Polygonaceæ*, although other plants during the year have been examined in this connection.

The chemical differences enable the following classification to be adopted :—

- (a) The best kind includes the more useful pot-herbs with over 20 per cent. of crude protein, over 1 per cent. of phosphoric acid, and a low yield of fibre. These are *Spinacia oleracea*, *Amarantus* (all species but *spinosus*), *Basella alba*, *Chenopodium album*.
- (b) The second group includes those plants yielding in a dried state from 15 to 20 per cent. of crude protein, less than 1 per cent. of phosphoric acid, and a fibre content of usually over 15 per cent. *Allernanthera sessilis*, *Beta vulgaris*, *Atriplex* sp., *Digera arvensis* and *Polygonum* sp.

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(c) The third class consists of coarser famine foods with less than 15 per cent, of crude protein and a large amount of fibre or mineral matter: such as *Calligonum*, *Celosia*, *Haloxylon* and *Suaeda*. Other food substances used in times of scarcity and analysed were leaves of *Antidesma dian-drum*, *Bauhinia*, *Colocasia antiquorum*, *Hibiscus Sabdariffa*, *Oxal scandens*, *Rydea hypocrateriformis* and *Vangueria spinosa*:—

The following analysis of three roots may be quoted with interest :—

	Oxalis.	Sauromatum guttatum.	Scirpus grossus.
Water . . . .	9'90	10'10	4'50
Fat . . . .	2'10	'93	'73
Albuminoids . .	4'18	10'87	7'81
Carbohydrates . .	66'89	58'44	79'17
Fibre . . . .	12'43	10'90	4'13
Ash . . . .	4'50	8'76	3'66
	<hr/> 100'00	<hr/> 100'00	<hr/> 100'00
Nitrogen . . . .	'67	1'74	1'25
Phosphoric acid . .	'16	'62	'52
Silica . . . .	'70	'56	'83

## INDUSTRIAL SECTION.

**Manna.**—A substance called "the gum of *Elaeodendron glaucum*" was sent from Saharanpur by the Director, Imperial Forest School, but on examination it proved to be a saccharine exudation or manna. The chief sugar separated in a crystalline form by boiling alcohol melted at  $165^{\circ}$  C.

It is hoped that the real origin of this secretion will be identified, and that other substances found under this name will be sent for examination so that the Indian mannas may be classified according to the character of the sugars they contain.

**Tea juice.**—A liquor forwarded by the agent of a Tea Company was sent for analysis. This liquor was said to have been expressed in the course of manufacture of green tea, and was of a dark brown colour and readily fermented. It was supposed to contain caffeine. The amount of caffeine in the dried extract was 1.88 per cent., but owing to the diluted state of the liquor no method of separating the caffeine either by precipitation or evaporation could be suggested.

**Country liquor.**—Alcoholic estimations of country spirits and wash were made for the Commissioner of Excise and Salt, Bengal. The President of the Excise Committee, Central Provinces, has sent samples of native beer called "Pachwai" and "Sagda", together with the ingredients used in the manufacture. The examination of these samples has been made, and a report is being drawn up on the peculiar method of manufacture adopted.



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*Alunogen.*—Two samples of a white salt, sent by Mr. Hughes Buller from Baluchistan under the name of "Phul mak", were said to be used in dyeing. The salts purified by crystallisation had the composition of aluminium sulphate,  $\text{Al}_2\text{O}_3 \cdot 3\text{SO}_3 \cdot 18\text{H}_2\text{O}$ , and was referred to Alunogen or "Hair Salt."

*Arsenic Sulphide.*—Three pieces of a yellowish mineral called sulphur were sent by a Forest Ranger, in Shwegyin, Burma, who said it was used in medicine. The mineral proved to be arsenic sulphide which in the form of realgar and orpiment is occasionally employed in medicine by Burmese and Chinese.

*Arsenate of Lead.*—The Entomologist to the Government of India sent for valuation four specimens of this preparation which is regarded as an efficacious insecticide in the form of paste or powder. The amount of diplumbic arsenate in the paste varied from 47.3 to 96.6 per cent.

*Ashes of Rice husk.*—These ashes are available in large quantities in Burma and consist principally of silicious matter. The fertilising constituents are lime 0.13 per cent., potash 0.34 per cent. and phosphoric acid 0.29 per cent. The ash would, therefore, benefit impoverished soil, or it might be employed in the manufacture of mortars and cements, or as an abrading or polishing material on account of the high percentage of Silica in it.

*Limestone.*—Two samples of limestone from Chota Nagpur had the following composition:—*White lime-*

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*stone* : Calcium carbonate 84·61, and silica 11·2 per cent.  
*Bisra or blue limestone* : Calcium carbonate 54·89, magnesium carbonate 36·13, and silica 7·7 per cent.

*Saltpetre Salt*.—Two specimens of salt separated as a by-product at the Saltpetre Factory, Nakaldanga, Calcutta, were analysed on behalf of the Commissioner of Salt and Excise, Bengal. One sample was labelled "Sitta" or impure salt, the other was purified.

Their composition is thus set out :—

	Sitta.	Salt.
Moisture . . . . .	8·40	4·70
Sodium chloride . . . . .	61·50	81·62
Sodium sulphate . . . . .	3·55	2·77
Calcium nitrate . . . . .	3·28	1·64
Magnesium nitrate . . . . .	5·18	5·18
Potassium nitrate . . . . .	14·69	4·84
Sand & dirt (insoluble) . . . . .	3·40	2·25
	<hr/> 100·00 <hr/>	<hr/> 100·00 <hr/>

*Shells*.—In connection with an enquiry from America into the value of shell lime used in India, the following analyses were made of shells known to be burnt for lime :—1—*Cytherea* shells from Sunderbans ; 2—*Talescopium* shells from Sunderbans ; 3—*Unio* shells from Sunderbans ; 4—Shells from Travancore.

# REPORT OF THE ACTING SUPERINTENDENT,

	1	2	3	4
Moisture . . . .	'45	'40	'10	'35
Organic matter . .	2'40	1'50	3'90	2'75
Calcium carbonate .	95'45	94'14	93'52	9'054
Magnesium carbonate .	'29	1'00	1'20	...
Calcium phosphate .	'04	'08	'07	'12
Calcium sulphate . .	'41	'41	'18	'45
Iron oxide & alumina .	'56	'42	'53	'88
Silica . . . . .	'40	2'05	'50	1'40
	<hr/> 100'00	<hr/> 100'00	<hr/> 100'00	<hr/> 100'00

*Sulphur.*—In May last Major H. L. Showers, C.I.E., Political Agent, Kalat, sent a parcel containing sulphur obtained from a mine in the Bolan Pass. It was found in a bed about one foot deep on the face of a hill. It was required to know if the product would be of any commercial value if the mine were worked.

The sample had the following composition :—

Moisture . . . . .	1'60
Sulphur . . . . .	45'90
Calcium sulphate . . . . .	9'88
Iron & alumina . . . . .	'60
Sand & silica . . . . .	33'30
Organic matter	8'72
Combined water, &c. }	
	<hr/> 100'00

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The earth contains nearly half of its weight of pure sulphur which might be easily separated by some simple process of roasting and sublimation.

In January last I undertook a confidential enquiry on behalf of the Postal authorities into the cancellation of postage stamps by various inks. The report received a special letter of thanks from the Director General of the Post Office of India.

The following papers have been published during the year or are in the press embodying some of the above analytical results :—

### *By myself.*

Silajit, an Ancient Eastern Medicine. (Journal, Asiatic Soc., Bengal, LXXII, Pt. II., No. 3, 1903.)

Melanterite in Baluchistan. (Journal, Asiatic Soc., Bengal, LXXII, Pt. II., No. 4, 1903.)

Mylitta lapidescens. (Pharm. Journ., Vol. LXX, 701.)

Note on Kino Enzyme. (Pharm. Journ., Vol. LXX, 1903. 840).

Aquilaria Agallocha (Aloe wood). (Agricultural Ledger No. 1 of 1904.)

Chinese or Vegetable Tallow. (Agricultural Ledger No. 2 of 1904.)

Indian Spinach and Pot-herbs. (Agricultural Ledger No. 6 of 1904.)

Indian Beeswax. (Agricultural Ledger No. 7 of 1904.)

### *By Mr. O. Reinherz.*

Fruits of Ficus as famine food. (Agricultural Ledger No. 4 of 1904.)

Shorea seeds as famine food. (Agricultural Ledger No. 5 of 1904.)

**REPORT OF THE ACTING SUPERINTENDENT,  
INDUSTRIAL SECTION.**

**VI.—Library.**

The number of publications, books, pamphlets and serials received during the year amounted to 246. They were duly registered and placed in their proper places in the Library.

The Library has to be dusted at very frequent intervals, because, being in a dark place, frequent dusting is the best method of making sure that fish insects and book beetles are not attacking it.

I have the honour to be,

Sirs,

Your most obedient servant,

**I. HENRY BURKILL,**

*Acting Superintendent.*

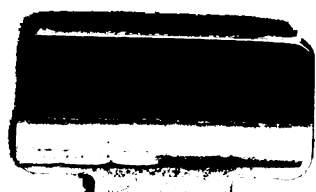


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